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Twenty-Fifth Annual Meeting, Vancouver, Week of June 22nd

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Annual Examinations, 1936

CERTIFICATION OF SANITARY INSPECTORS IN CANADA

THE annual examinations for the certificate (C.S.I.(C.)) to be granted by the Canadian Public Health Association will be held in certain provincial centres on September 23rd, 24th and 25th.

The examinations will be practical, oral and written, and will extend over three days. One day and a half will be utilized by the candidate in making a report on an assigned local inspection and for the conduct of the oral examinations. Three written examinations covering the subjects of the syllabus will occupy the remaining day and a half.

A syllabus outlining the subjects of the examination and the requirements for registration, together with an application form and a list of recommended text and reference books and other publications, may be obtained by addressing Dr. J. T. Phair, Secretary of the Committee on the Certification of Sanitary Inspectors.

Applications must be received by the Secretary of the Committee on or before Monday, August 24th, 1936.

CANADIAN PUBLIC HEALTH ASSOCIATION

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The Problem of Heart Disease in Adults*

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EXAMINATION of the accompanying chart (page 262) shows marked changes in the mortality from the major causes of death across the field of medicine. Some of the changes sweep and others crawl, but even in a decade great differences are seen.

The chart shows the number of deaths per hundred thousand of population in Ontario at five and ten year periods for the past fifty years from the ten chief causes of death. Fifty years ago half of the deaths occurred in young people and were due to infectious diseases, headed by tuberculosis. In this period the total mortality from all diseases has decreased only about ten per cent, or from 1,100 to 1,000 per 100,000. For the twenty years previous to 1903, tuberculosis headed the list of fatal diseases, with a record of 123. From then on it has declined steadily and consistently year by year to sixth place, with a rate of 32 in 1934, except for a very slight rise during the influenza epidemic of 1918-19. The chart can be summarized briefly by pointing out that two lines, Bright's disease and accidents, rise fairly level. Five lines show declines; namely, tuberculosis, pneumonia, apoplexy, influenza, and infantile diarrhoea. Three lines rise with striking parallelism; *i.e.*, heart disease, diseases of the arteries, and cancer. The course of the variations in the last ten years is most surprising. Tuberculosis has declined from 75 to 32; pneumonia from 100 to 60; apoplexy from 50 to 35; and influenza from 50 to 16. Another remarkable fact is that the peak of pneumonia and influenza in 1918 had no effect on the graphs of the important diseases such as heart disease, apoplexy, cancer, or Bright's disease. It did produce a little increase in deaths from tuberculosis.

**Presented before the Academy of Medicine, Toronto, Section of Preventive Medicine and Hygiene, March 26, 1936.*

At a glance, one can see the great problems facing medicine; namely, cardiovascular disease and cancer.

This chart shows a great increase in the diseases that kill chiefly the aged. In 1923, 46 per cent of total deaths occurred after 60. Ten years later, 58 per cent occurred after 60. Statistics show that more and more people are reaching advanced ages. In 1933 there were 3,400 more deaths over 60 than in 1923. The mortality in people over 60 in 1932 and 1933 was 3,500 per 100,000. These 3,400 additional deaths, therefore, would represent 60,000 more people living to be over 60 in 1933 than in 1923.

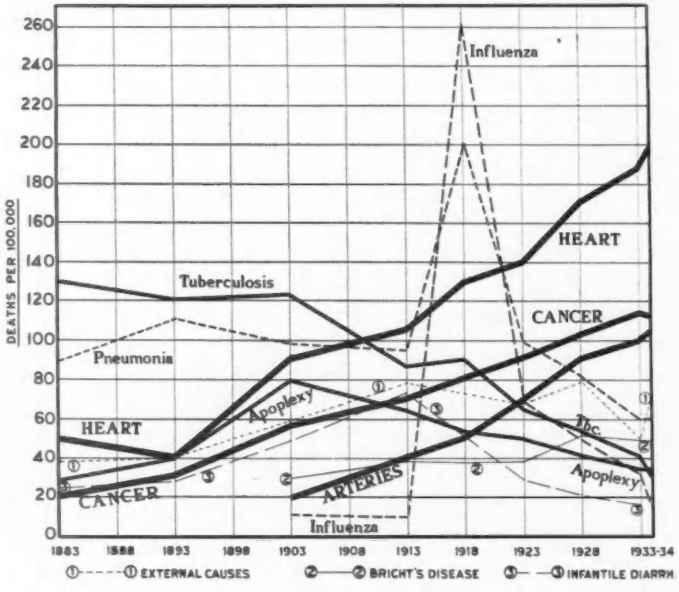

FIGURE I.
Deaths per 100,000 population from the ten chief causes, Ontario, 1883-1933-4.

HEART DISEASE OF RHEUMATIC ORIGIN

In 1934 over 7,000 deaths occurred from heart disease. About 25 per cent of these are of rheumatic origin. In the Toronto General Hospital 25 per cent of the cardiac patients are rheumatic. This excludes, of course, children under 15 years. However, the deaths at this age are few. Thus in Ontario, in 1934, there were approximately 1,750 deaths from rheumatic heart disease. This is 50 per cent greater than the deaths from tuberculosis, which were 1,142 in that year. In 1913 the deaths from tuberculosis were double those from rheumatic heart disease. Now the situation is that we have millions of dollars invested in sanatoria to combat tuberculosis and it is being done so successfully that now rheumatic heart disease is 50 per cent more serious than tuberculosis, as a cause of death. In our colleges much more attention is devoted to tuberculosis than to rheumatic fever. Rheumatic fever, how-

ever, is a much more difficult problem. Naturally, difficult problems survive longest. We are greatly hampered by not actually knowing its cause. Furthermore, tuberculosis has a greater tendency to become quiescent with rest than has rheumatic heart disease. Just about 66 per cent of the latter are progressive until death, although on an average it takes rheumatic fever longer to kill than it does tuberculosis. Rheumatic fever is a chronic systemic infection (with occasional acute exacerbations) that tends to localize and form inflammatory nodules in nearly every tissue in the body, but especially in the heart, joints and nervous system. Another difficulty is that in 40 to 45 per cent of cases, rheumatic heart disease comes on insidiously and is unsuspected by the patient until it is discovered accidentally or has damaged the heart muscle sufficiently to lessen the exercise tolerance, after having been actually active for many years. A further difficulty lies in the confusion in the use of the word rheumatism. An unsuccessful effort was made to limit this term to rheumatic fever. Now we see rheumatic arthritis being discussed, together with all forms of unrelated chronic arthritis, and in some countries the belief exists that the arthritis of rheumatic fever and the various forms of chronic arthritis are one and the same disease.

However, with rheumatic fever, at least one can say that ground is not being lost. In 1913 the total deaths under 40 were just under 17 per 100,000; in 1923 just over 13, and in 1933 just under 13. It would appear in Ontario that deaths from this cause are declining moderately. Records for the same ages in the United States show a decline of more than three times this rate.

It is easy to present the problem of rheumatic heart disease. Its solution is another matter. The following are some suggestions.

Earlier diagnosis in children and longer periods of stricter rest are needed. Often one hears the history that a patient of 30 with mitral stenosis had rheumatic arthritis in a mild form when a child and either was not in bed at all or only for a few weeks.

Children should be protected from infection in so far as possible, by early removal of focal infections and avoiding contagion, especially colds.

In children of rheumatic families, tonsils should be removed before two years of age. Rheumatic fever is said to be 34 per cent less common in tonsillectomized children. Removal of tonsils after rheumatic heart disease has begun has very little effect.

Should cases be reported? Compulsory notification is enforced in Norway, Denmark and Iceland, where figures show 1 to 1.5 per cent of the population to be affected. Other evidence shows that rheumatic fever is much more prevalent there than these figures indicate. Notification is being tried in three boroughs in London, England, with not too promising results. It is there estimated that only about a third of the cases are actually reported. Making it a reportable disease would at least have the benefit of attracting greater attention to this important disease, and would tend to improve its early diagnosis and treatment, and the general practitioner's conception of its real importance.

Institutional care has been tried both in temperate and tropical climates, without very impressive results, at least so far. Epidemics of acute exacer-

bations ran through the institutions. Cases cared for in warm climates did well while there, but when they came to a colder climate they relapsed and appeared to have lost resistance to the infection.

Better hygienic and dietetic care of children have probably reduced the incidence slightly in Ontario. A plan has been instituted in Ontario providing for special training and examinations for physicians entering the provincial hospitals for mental disease. It is possible that a similar scheme could be instituted for physicians undertaking medical inspection of children in schools. This might better be done on a province-wide plan by doctors who have received special training, including training in distinguishing organic heart murmurs from functional murmurs.

THE PROBLEM OF VASCULAR DISEASE

Important, however, as is this baffling disease, with its mortality of approximately 60 per 100,000, vascular disease ranks nearly five times as high, claiming a toll of nearly 300. However, less than half of these are of cardiac origin. In the medical wards of the Toronto General Hospital, chronic degenerative heart disease, coronary thrombosis, angina pectoris and hypertention account for 70 per cent of cardiac cases, lues for 2 per cent, congenital heart disease for 1½ per cent, hyperthyroidism possibly 1 per cent, and bacterial endocarditis 1 or 2 per cent. In the New England States, Dr. Paul White estimates their causes of heart disease as follows:

Rheumatic	40 per cent	
Hypertension	25 " "	
Coronary sclerosis	25-33 per cent	
Congenital	2 per cent	
Syphilis	4 " "	(in the United States
Thyroid	3 " "	generally, 10 per cent)
Subacute bacterial endocarditis	2 " "	

Unfortunately, our provincial reports so far have given us no information in reference to essential hypertension. Our rate in the Toronto General Hospital is the same as in New England, i.e., 25 per cent. The real importance of essential hypertension, by which we mean either a high systolic or a high diastolic pressure or both, is much greater than is suggested by this figure, which would indicate that high blood pressure is connected with about 40 deaths per 100,000. These are only cardiac deaths. Hypertension is also connected with many of the arteriosclerotic deaths, possibly from 25 to 50 per cent of the 106 per 100,000 in 1934. It is also connected with almost all the deaths from Bright's disease, which run in the neighbourhood of 50, and with many of the deaths from apoplexy, which are now down to 35. It is thus seen that high blood pressure is really connected with something like 150 to 175 deaths per 100,000. It has been stated that the diseases associated with high blood pressure account for more deaths than from any one other cause. It is, of course, not exactly fair to attach all the blame to this one factor alone.

This condition has long been recognized as a clinical entity and has gone under many names, the best of which are primary, or essential or arterial hypertension. It is commonly called simply high blood pressure, and is used to mean increased arterial tension not due to a known cause. Anyone who discovers its cause and prevention will greatly advance medical science, because it accelerates the rate at which vascular disease advances, and overworks the heart and ends fatally on an average of fifteen to twenty years after it starts. At present we must admit that it is a progressive, incurable disease of unknown origin, always tending to end fatally in from one to two, or twenty or thirty years. We know of a few diseases which raise the blood pressure, and therefore it is quite probable that in the group of unknown origin there is a variety of causal agents, about which we know just next to nothing. A score or more of theoretical causes have been advanced and contradicted. It has been shown that its incidence varies with occupations, in direct relationship to the mental responsibility entailed. However, even this has been contradicted.

In view, therefore, of the confused state of our knowledge of this disease, it is highly important in treating cases with hypertension to do nothing harmful. In spite of much teaching to the contrary, it is extremely common for doctors to cut meat or protein or salt out of the diet of such patients, and the majority of the laity believe implicitly that blood pressure can be controlled by diet. The other harmful measure which is commonly made use of is unfavourable suggestion. These patients are warned unnecessarily against exercise, and they are in constant dread of strokes, heart failure, etc. It is important to make all remarks to such patients as encouraging and reassuring as possible, and by education and sedatives to try to reduce their apprehension and psychomotor activity. If they are afraid of a stroke, tell them the chances are five or six to one that they will not have a stroke.

The relation between hypertension and vascular disease should be understood. Hypertension always sooner or later produces or helps to produce vascular disease. On the other hand, advanced vascular disease has no special associated blood pressure. With apparently severe vascular disease, the blood pressure might be anything from 90 to 300. In hospital cases, only about 25 per cent of the cases of arteriosclerosis have an elevation of blood pressure.

It is quite obvious from previous remarks that vascular disease is the great destroyer of life. To prevent arteriosclerosis would be almost to defeat the inroads of age. We would still have cancer to conquer but, on the average, the span of life would be greatly lengthened, whether or not this be desirable. In the course of our evolution, had it not been necessary for Providence to develop a system of pipes and a pump to carry fluids and oxygen to far-lying cells, much trouble would have been avoided. Vessels are difficult to control in emergencies such as severe infections and they are hard to keep in repair. Arterial sclerosis is not a disease. It is a set of similar end effects (scarrings and degenerations) from several causes, of which we know for a certainty about as little as of the causes of diseases of any of the other systems. Things

that are blamed for vascular diseases include age, heredity, strains due to high blood pressure, fatigue and worry, over-eating and drinking, poisons of bacterial, chemical or metabolic origin, and last and possibly greatest, for the moment at least, an abnormal metabolism of cholesterol, a hypercholesteraemia or a hyperlipaemia. Most of these factors are beyond our control. But at least we can have removed our focal infections, we can try to avoid fatigue and mental strain, by being satisfied with the ordinary things of life, curbing our ambitions in the struggle of life, and getting nine or ten hours' sleep at night. We should cultivate an equanimity of life and go about our work without hurry, worry and mental tension and learn to say, "Well, what does it matter after all?" We should exercise the blood vessels of limbs as well as those in our heads and learn to be still and relax mentally as well as physically. As to control of the factor of hypercholesteraemia, which is now the subject to the fore, some are already commencing to omit egg yolks and fats from their diets.

In Ontario, hyperthyroidism and lues are becoming almost negligible as causes of heart disease. Soon after iodized salt was introduced, there was a marked wave of increased incidence of hyperthyroidism, especially of the so-called toxic adenoma type. About the same time, patent medicine vendors took the hint and sent men around through the country selling iodide tablets for the prevention of goitre. The peak of this wave occurred about 1925 or 1926. In those years it was common to see cases whose symptoms of hyperthyroidism began a few months after they commenced to use iodized salt, or to take iodide tablets. About 1928 the wave had declined to its previous level and has been declining ever since, so that now it is rare to see a case of cardiac insufficiency definitely secondary to hyperthyroidism.

Lues is also declining very satisfactorily. The incidence of positive Wassermann tests among the hospital patients in the Toronto General Hospital has declined from 11 or 12 per cent twenty years ago to 1.9 per cent now. In practice, cases of luetic aortitis and aneurysm are becoming very infrequent. Out of the last 160 cardiac admissions at the Toronto General Hospital, only three have had specific aortitis. No doubt the campaign of the Canadian Social Hygiene Council and the legislation for compulsory free treatment have been responsible for much of this control of the disease. All that one can suggest for this disease is to support our present measures.

Really there is nothing very alarming in the increasing death rate from heart and vascular disease, because in Ontario in 1933 over 55 per cent of these cardiac deaths occurred over 70 years of age, and over 75 per cent of them occurred over 60 years of age. The percentages that occur over 60 and 70 are steadily increasing. Five years ago 73 per cent occurred over 60 and 50 per cent over 70. During the last fifty years there has been surprisingly little difference in the total numbers of deaths per year. These deaths have declined approximately 10 per cent. What has happened has merely been that the various causes have switched and the average span of life has greatly lengthened.

Death in Safety Week*

N. L. BURNETTE
Ottawa

AT last year's meeting of the Section of Vital Statistics and Epidemiology of the Canadian Public Health Association, Doctor A. H. Sellers presented a valuable detailed analysis of automobile fatalities in Canada from 1917-1934 (1).

Continuance of the upward trend in the accident rate is indicated by more recent figures now available. In the United States, death and injuries from automobile accidents reached a new high in 1935. They caused more deaths than diabetes or infant diarrhoea or influenza; or measles, whooping cough, typhoid fever and scarlet fever combined (2). The Metropolitan Life Insurance Company paid out in death claims due to automobile accidents twice as much as for diabetes and six times the sum paid on account of maternal deaths (3). Among Metropolitan Industrial policyholders the crude death rate from automobile fatalities was 20.3 as compared with 11.0 for measles, scarlet fever, whooping cough, diphtheria and typhoid fever together (4). This is the disheartening picture of automobile casualties in a year that was marked by an unprecedented volume of safety education and public interest in safety, including the furor caused by the famous magazine article, "And Sudden Death" (5). One might be forgiven for sharing the cynicism of the American Police Commissioner who, on being told that no fatal accidents had occurred on the streets of his home city for four days, is reported to have replied, "Yeh? Well, then, God just didn't want 'em."

In our country, the Ontario figures for January and February of 1936 show an 11 per cent increase in automobile accidents as compared with the same period of 1935, and preliminary figures indicate an increase for March. The Canadian mortality statement of the Metropolitan Life Insurance Company for March, 1936, shows an increase of over 60 per cent as compared with the same month of the previous year.

A comparison of Doctor Sellers's figures with those for gasoline sales and car registration is interesting (table I).

It will be noted that despite the increased registration of cars in 1930, the mortality declined, the drop in gasoline sales indicating that less use was made of those cars that were registered. In 1931 the picture changes. Registration falls off, gas sales go up, and the increased use of the registered cars is reflected in the increase in fatal accidents. The 1932, 1933 and 1934 figures speak for themselves. It would appear that (*a*) the chief factor in the rise and fall of the accident rate is car-miles travelled, the indicator being gas consumption; and (*b*) the total accident rate for any given year is not appre-

*Presented at a conference of the Section of Vital Statistics and Epidemiology of the Canadian Public Health Association, Toronto, May 5, 1936.

ciably affected one way or another by the volume of safety education. A curious side-light on this is that the province with the highest automobile accident rate can boast of the most active and energetic safety league.

Inasmuch as a person killed, or injured, in an automobile accident is just as dead or disabled as one who meets a comparable fate through preventable disease, it would appear that a public health group has more than an academic interest in this slaughter. The earnestness and enthusiasm of those presently engaged in safety teaching is not questioned, but it seems fair to ask whether much praiseworthy effort is not being expended blindly through neglect to enquire into causal factors.

TABLE I

AUTOMOBILE MORTALITY, GASOLINE SALES, AND MOTOR VEHICLE REGISTRATION†
Ontario, 1929-1935

Year	Automobile Mortality*	Gasoline Sales‡	Motor Vehicle Registration
1929	16.7	482	1,187,000
1930	15.7	461	1,232,000
1931	16.7	463	1,200,000
1932	14.3	440	1,113,000
1933	11.8	423	1,083,000
1934	14.3	479	1,129,000
1935	Not yet available	502	Not yet available

*Rates per 100,000 (after Sellers).
†Figures on gasoline sales and automobile registration supplied through the courtesy of the Dominion Bureau of Statistics.
‡Sale in millions of gallons.

Public health could contribute much to the field of safety education because of the traditional etiological viewpoint of preventive medicine. Admittedly, certain factors affecting the accident rate do not come within the province of public health. Those empowered to enforce laws for the public safety will always carry this responsibility, but there are other major problems which are of mutual interest, and toward the solution of which a scientific attitude would be helpful. For example, it is doubtful whether our present method of licensing, and particularly re-licensing, can continue without challenge from those who realize the danger of defects of vision and hearing, beginning mental and physical impairments which are likely to increase with the years, or poorly integrated motor-coordination.

Problems which are insoluble through propaganda alone, fall naturally into two broad classifications pertaining to (*a*) the car, (*b*) the driver. In connection with the first, certain debatable points have been well summarized by Professor Fales of the Massachussetts Institute of Technology (6). He charges that clearance is inadequate, steering is sluggish because the ratio has been steadily increased to make the wheel turn more easily; that the power plant has been developed out of all proportion to the road gripping, brake and steering properties of the car; that the driver's seat is a lounging seat, tending to make the driver sloppy and ineffective; that low roofs and rounded bodies

cause blind spots in the windshield pillars; that rear vision is badly obstructed; that inclined windshields are not good for the eyes; that many sedans collect lethal quantities of carbon monoxide inside them because of vacuum ventilating systems. While not necessarily accepting in whole or in part the statement of Professor Fales, and recognizing that the first three items in the statement belong to the realm of engineering, it seems reasonable to suggest that posture, fatigue, vision, and poisoning are matters of interest to the public health field.

Concerning the driver, can all the personal factors contributing to accidents be satisfactorily disposed of merely by preaching care and courtesy? In thirty-nine per cent of fatal accidents in Ontario in 1933-1934, excessive speed is charged as a major factor (1). Is this in itself a satisfactory diagnosis? What is the impulse behind the action of these drivers? It is surely not the same in each and every case and, moreover, the percentage seems such as to disprove the apparently exaggerated claim that speed is responsible for an overwhelming majority of mishaps.

To a searcher after underlying causes, what appears to be the most interesting group is the 28.6 per cent who drove off the roadway and the 20 per cent who were on the wrong side (1). An American study of 532,720 accidents lists only 121,460 as exceeding the speed limit, with 55,940 driving off the roadway, and 85,770 on the wrong side of the road (7). After due allowance is made for night accidents attributed to blinding headlights, what extraordinary mental processes governed the actions of the others? How important is the repeater in our accident record? Sellers quotes Ontario figures of 5.5 per cent of drivers involved in 16.8 per cent of accidents, but absolves the repeater of blame in one half of these cases. On the other hand, investigations made by some commercial firms in the United States (8) indicate something analogous to the problem of the accident-prone employee familiar to the student of industrial psychology.

One of Canada's leading newspapers (9), commenting on the increase in automobile accidents in Ontario for the first period of 1936, said: "The real remedy lies in taking from fools, as far as possible, the right to drive motor cars." One feels that the term used is unnecessarily harsh. Might it not be that in the major causes of accidents we are dealing unknowingly with a certain proportion of medical, neurological and psychiatric cases? It would seem worth while to explore this possibility. Certainly we will never touch these cases through our present methods of initial driving instruction and licensing, nor will we ever correct their faulty driving habits through exhortations to be careful.

Safety education has been most successful in connection with young children. There has been a marked reduction in the per cent of all automobile fatalities in Ontario occurring among children under fifteen (1). United States statistics indicate a similar improvement. Among the 36,400 deaths from automobile accidents that occurred last year in the United States, the school age-group was the one period of life which showed a steady and significant reduction in street accidents (2). Does not this point a moral?

Professional teaching is not haphazard. The trend of modern pedagogy

is away from mass instruction for all. Subject matter is carefully examined, its value determined, and it is applied with due understanding of differences in intelligence, the capacity to absorb knowledge, and the varying psychology of different age groups. No such understanding, however, marks the attempt to educate adults in safety. To what extent are settled driving habits affected by booklets, newspaper articles, radio talks and similar media of instruction? Certainly tests should be conducted to determine which methods produce the best results, and how the degree of success varies in different groups.

When we read horrifying descriptions of the suffering of accident victims, do we apply a moral to our own conduct behind the wheel, or does such literature fall into the same category as realistic war books and merely cater to our sadistic instinct? Does a moving picture of automobile accidents make us more careful drivers, or does hairbreadth escape from sudden death give us the same thrill as that engendered by watching the screen's best loved comedian skirting the edge of a precipice on roller skates? Equally common and understandable, from the viewpoint of behaviourism, is the attitude toward taking a chance, and compensating through belief that one's own superior judgment will prevent mishaps from which the other fellow suffers. All these very human traits are formidable obstacles to adult education. To what extent they can be overcome, can be determined only by enquiry conducted in a scientific spirit. If only partial results can be achieved by the very best methods properly applied, then the problem works back to first principles: *initial instruction* for the purpose of setting up good driving habits, the *elimination* of those who, for various reasons, should not be licensed, and *periodic examination* for the purpose of checking up on progressive impairments.

The time for driving instruction would appear to be during the final high school years. The resources of engineering, of the psychological laboratory, and medical knowledge, are all available for the purpose. It is not hard to visualize apparatus that would instruct in normal driving, and at the same time record defects in judgment, dexterity, motor-coordination, vision, hearing, and other handicaps. From such initial experiments one might expect results which eventually would lead to the setting up of practical standards of licensing and ultimately toward at least a partial solution of this problem.

CONCLUSIONS

1. Death and injuries from automobile accidents have reached a volume where the public health field must be concerned about them.

2. In many major causes of accidents, the reasons advanced are purely guesses.

3. Safety education cannot be successful until its teaching is based on the proper application of tested methods designed to correct conditions for which the cause has been established.

4. Public health organization could bring into the field of safety education a viewpoint at present lacking because public health is based on preventive medicine and the traditional attitude of preventive medicine is experimentally

to establish causes and test methods of control before embarking upon propaganda.

5. In public health work, there is already a well established precedent for combining medical knowledge with engineering and pedagogical psychology.

6. Public health should interest itself in traffic accidents, to the end that, with the exception of such matters as highway construction, law enforcement and certain factors in motor engineering, the public will eventually look to the public health field for the explanation of important problems, as well as leadership in plans for their solution.

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(9) *Ottawa Journal*, April 20, 1936.

Partnership in Public Health Nursing*

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DR. LIVINGSTON FARRAND of Cornell University says, "The part which public health nursing plays and must play in any organized effort to improve human vitality under modern conditions is now so obvious that it no longer needs argument. The problem is to increase its effectiveness".† Following Dr. Farrand's thought, we may say that since 1897 the Victorian Order of Nurses for Canada has been developing public health nursing services throughout Canada, that it has helped to make the need for such service "obvious" and is now considering the problem of increasing "effectiveness".

Public health nursing in Canada has progressed along much the same lines as that followed in the United States. Together we have been evolving a new kind of service, trying out new methods, continuously preparing new standards. To-day, we think we are growing up and that our future effectiveness lies chiefly in two channels: one, to extend public health nursing to every individual, family, and community which needs us; the other, to keep the quality or content of service adapted to the economic, social, and scientific developments of our day. In short, we are concerned with greater quantity as well as better quality.

Our problem is how to bring about effectiveness in terms both of quantity and of quality. My purpose is, therefore, to show that our future effectiveness depends on partnerships in public health nursing. There are four types of partnership with which we are concerned: the partnership of public health nursing with the medical profession, partnership with the individuals and families we serve, partnership with lay groups, and inter-agency partnership whether the agencies be public or private; local, provincial, or national.

Out of the depression, we have learned as never before that public health nursing is not an entity in itself. Its two principal objectives are, like those of all public health procedure, to prevent illness and death and to promote health.

In general, the public health nurse's function in the public health program is to assist individuals and families to protect and promote their own health by:

1. Helping to secure early medical diagnosis and treatment for the sick.
2. Rendering or securing nursing care.
3. Acquainting families with and interpreting to them medical, sanitary, and social procedure for prevention of disease and promotion of health.

**Presented at the Annual Meeting of the Victorian Order of Nurses for Canada, Ottawa, April 29, 1936. By the term public health nursing is meant nursing given to the public either by an official, a tax supported, or a private voluntarily supported agency.*

†*"Survey of Public Health Nursing", The Commonwealth Fund.*

4. Assisting and securing aid in the adjustment of family and social conditions which affect health.
5. Influencing the community to develop adequate public health facilities through participation in appropriate channels of community education and in any movement to develop a sound, adequate community health program.

It is obvious that such "broad functions" cannot be undertaken by the public health nurse alone. She must have the co-operation of physicians, families, lay groups, and organizations.

The importance of this plea for partnership may be illustrated by one set of facts—a study of nursing care in fatal cases of pneumonia made by the Metropolitan Life Insurance Company. Of a group of policyholders who were entitled to nursing care and who lived where such care was available, 10 per cent were cared for by Metropolitan visiting nurse service, 40 per cent went to hospitals, 50 per cent had no skilled care. Why is it that 50 per cent of the patients who died of pneumonia—a disease for which professional nursing is recognized as essential—did not make use of available nursing service?

PARTNERSHIP WITH THE MEDICAL PROFESSION

Does this not indicate first of all our need for partnership with the medical profession? Nursing care is given by public health nurses only under the physician's orders for each individual case. But what of the physician who does not call the nurse? Have we failed to make our services known and liked by the medical profession? Perhaps we need to have more opportunity to appear before organized medical groups. Perhaps we need to invite more physicians to take active part in medical committees appointed to advise local nursing agencies. Many a local agency with an excellent medical advisory committee never calls the committee together except for "emergencies". "Standing orders" to guide the nurse in first aid service before the physician arrives are an important safeguard which should be approved by the medical advisory committee and the local medical society. The very consideration of "standing orders" gives the physicians a chance to review the whole nursing service. Likewise, changes in or additions to the nursing program may well be discussed with the physicians before they are undertaken. Of course the best way of selling public health nursing to the physicians is to give them the best service we can in each individual case and to report back to them continuously. However, we have done this for years and it now seems that in addition to contact on an individual basis there is need for a well-planned program of information about public health nursing for presentation before organized medical groups.

CO-OPERATION WITH FAMILIES

You may be surprised that the relationship of the public health nurse to the individuals and families she serves is also mentioned as a partnership. This indicates a change from the old-fashioned nurse, who told the family what to do or who definitely took over many responsibilities belonging to

parents, to the newer kind of nurse with some knowledge of mental hygiene, who first analyzes with the family its health situation, then gives bedside nursing care and instruction, and finally encourages the family to take for itself those steps that are necessary for the maintenance of health. Generally speaking, we have accepted the family as the unit in health and social work. In so doing, we have assumed the responsibility for guidance of the whole family and for the whole series of health conditions for which that family may have need of help.

As a basis for determining whether we are doing this in actual practice we may use the analysis of types of cases nursed in 1935 by the Nursing Service of the Metropolitan Life Insurance Company in the United States and Canada. It will be of interest to know that the Victorian Order of Nurses supplies 34 per cent of the nursing visits to Metropolitan policyholders in Canada, other associations supply 3 per cent, and the Metropolitan Life Insurance Company's salaried nurses supply the rest, namely, 63 per cent.

CASES RECEIVING NURSING CARE ACCORDING TO DIAGNOSIS

	All Territories	Canada
Communicable disease	7 per cent	6 per cent
Acute conditions	45 " "	38 " "
Chronic conditions	8 " "	4 " "
Maternity	26 " "	40 " "
All others	14 " "	12 " "
Total	100	100

From this analysis, we see that in Canada the emphasis has been placed on maternity service, whereas in other territories relatively more attention has been given to other conditions. Such figures are a helpful guide when we seek to balance our service in order to make it a valuable health safeguard for the family as a whole.

PARTNERSHIP WITH LAY GROUPS

The building up of a well-balanced program depends largely on partnership with lay groups. These groups make two important contributions to the success of our work: first and foremost, the proper understanding and use of the service and, second, proper financial support which is obtained only when, as, and if the service is understood and appreciated. It is to lay groups that you may look for help in spreading the news to the public that the nurses care for acute and chronic conditions and also communicable disease cases.

When speaking of lay groups in relation to public health nursing, we are prone to put them into three categories: members of the boards of governors of local organizations, volunteers in the nursing service, and community-wide agencies such as civic organizations, service clubs, churches, etc. We should expect naturally that the board of governors of any local service would be the best informed and most alert to the problems of any local nursing service. Next, we should expect volunteers, those who make supplies, assist at clinics,

give motor corps service, etc., to know the program. Finally, we like to think that every organization interested in civic and community betterment knows how to use available nursing service. In fact, many a civic organization sees the need for nursing service before it has been organized and turns to a national agency for help in the establishment of local service.

The National Organization for Public Health Nursing has organized a special section for board and committee members. It has for the past six and one half years had a paid secretary who is a layman and has made notable progress in helping local boards to organize and to develop properly, to use volunteers effectively, and to encourage large civic and social lay groups to take on active interest in public health nursing. This experience in the United States has been a valuable contribution toward the desirable partnership of laymen and public health nursing.

RELATIONSHIPS WITH GOVERNMENTAL AND OTHER AGENCIES

It remains now to discuss the relationship between agencies—on the one hand, governmental agencies supported by taxes and, on the other hand, those supported by private funds—the voluntary or private agencies. That these two groups are coming closer and closer together is clear from the fact that, increasingly, public agencies are buying certain services from private groups. In the United States about 60 per cent of the private agencies receive some tax funds. In many instances this is done by buying a unit of service at a cost per visit. This, to my mind, is the great contribution that has been made by the insurance companies—demonstration of a practical method of buying a unit of service at a well-analyzed cost per unit. In nursing this unit is defined as a visit to an individual needing care.

In our present state of development, in the United States at least, we think of governmental agencies, such as health departments and boards of education, as responsible for communicable disease control and the supervision of the health of well persons of all age-groups. Admittedly, governmental agencies are not yet equipped in terms of budgets, personnel, and organization set-ups to fulfil this tremendous obligation completely. We think of the private agency as offering bedside nursing care as a part of a family health service. In giving health service to a family, the visiting nurse is bound to get into the field of communicable disease control and health supervision. Likewise, to-day, our health departments are taking a new interest in bedside care.

With the enactment in the United States of a Social Security program, new public health nursing services have been established in both the United States Public Health Service and the Children's Bureau of the Department of Labour. These federal official agencies are advocating, particularly for rural communities, one local organization—a county health department whose nurses shall give to each family every type of public health nursing service which that family needs. Thus one nurse would combine in her visits to a family, bedside care as well as instruction and assistance in prevention and

control of communicable diseases and the promotion of the good health of the whole family.

Suppose we accept for the moment this idea of one generalized nursing service for rural areas, what is our goal as to the number and kind of public health nursing agencies in large cities? "The Survey of Public Health Nursing" made by the National Organization for Public Health Nursing in 1934 recommends that there be not more than two agencies in large cities—one the health department, the other a private organization. The survey goes one step farther and suggests that in some instances the nurses of these two groups be combined under one central organization. Experimentation in the unification of all public health nursing groups is now under way in some cities, such as Columbus, Ohio, and Savannah, Georgia.

For the moment, however, we have in many cities two or more organizations, both official and non-official. Our great present need is for partnership between them. There are a number of ways by which this desirable partnership may be secured. One of the most important is that representatives of the official agency, particularly the health officer, be a member of the board of directors or the medical advisory committee of the private organization. Likewise, some scheme is needed for utilizing the interest and influence of the important laymen of the private agencies to help build up strong health departments. In some places this is accomplished by a citizens' committee to assist the board of health. In other places a health council or a health committee of a council of social agencies pools the interest of both official and non-official groups and fosters joint thinking, planning, and action.

With the close co-operation of those responsible for policies and management there is apt to result closer association of the staff members of the public and private agencies. Should not the supervising nurses of each group sit down together for correlation of their programs and joint planning? Is it too much to expect that the staff nurses of the two groups meet together for lectures, demonstrations of the work of each group, and consideration of problem cases? The best integration of the work of the staffs of both groups seems to occur where the district offices of the public and private agencies are located side by side in the same building. Thus we see developing the neighbourhood health centre idea so well carried out in the city of Toronto.

Certainly the trend of the times is toward joint rather than individual effort. If we think of the family as the unit of our health work, we appreciate the fact that the family finds it difficult to discriminate between the services offered by a multiplicity of agencies. Hence the closer the interplay between all types of health agencies, whether public or private, the better our chance to promote family and thereby community health.

But we are also concerned with the health of a whole nation, and this leads us to consider the partnership of local agencies with provincial and national groups. We are interested first from the standpoint of extending service to every citizen throughout the land, regardless of location, race, or creed. We are also interested from the standpoint of the best possible quality

of service. To this end local, provincial, and national health groups must interrelate their interests, funds, and personnel.

From the private agency standpoint, the great contribution of the Victorian Order of Nurses is that you have formed a national partnership with local groups all over this country. To the lay men and women on your boards and committees must come a great glow of satisfaction, for it is through your partnership with each other that better nursing is continuously being provided to more people. It is you who form the real structure of your organization and interpret its work to the public. It is you who have attracted to your work outstanding nurse leaders, and it is because of you that Miss Smellie, internationally known for her success in public health nursing, has been able to lead her assistants and staff nurses to ever increasing effectiveness of service.

Antitoxinogenic Value of Plain and Alum-Precipitated Toxoid

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IN view of the "one serious criticism" of Fraser and Halpern's work on diphtheria toxoid voiced in the editorial of the issue in which their articles (1) appeared, namely, the relatively small number in the groups studied, we believe that the results of our study may be of value in helping to supply the volume of evidence necessary to establish the relative merits of the two toxoids in question. At the time that our work was begun there was no satisfactory human antitoxinogenic comparison of plain and alum-precipitated toxoids reported in the literature. Our study was undertaken, frankly, in the hope of being able to establish the equality, if not the superiority, of one dose of alum-precipitated toxoid when compared with two doses of plain unmodified toxoid commonly used in this region.

The toxoids used in this study were obtained from a single routine lot (B22) prepared at the Texas Hygienic Laboratory. The unmodified toxoid of the lot contained 17 Lf's per cc. and satisfied the requirements for commercial toxoid of the National Institute of Health, Washington. Some of this toxoid (lot B22) was precipitated in four-litre portions, using as a precipitant two-litre portions of 4 per cent alum potassium sulphate according to the technique of Havens and Wells (2). The precipitated toxoid was washed with saline and restored to the original volume of four litres by the addition of saline containing 1:10,000 merthiolate as preservative. This preparation of alum toxoid was found to have a flocculation value of 15.5 Lf's per cc. The administration of 1 cc. (one human dose) into a series of guinea pigs was followed by the development of more than two units of antitoxin within six weeks.

The individuals chosen for this study resided in two institutions located in the suburbs of Austin, Texas. Their ages ranged from 7 to 29 years, the majority being young adults. The group receiving two doses of plain toxoid consisted of twenty-five individuals, and the group receiving alum toxoid, thirty-four. Some individuals of both groups were Schick-tested one to two weeks before toxoid was administered. All of those tested were Schick-positive. No toxoid sensitivity test was included. The final Schick reactions of all except three of those who received a preliminary Schick test are shown in tables I and II. The number Schick-tested is too small for conclusions and is given only to complete the record.

The serum of all individuals included in tables I and II contained less

than 0.01 unit of antitoxin per cc. of blood serum collected on the day that the initial dose of toxoid was injected. We did not test originally for smaller amounts of antitoxin. In the majority of cases blood was taken for antitoxin titrations at the fourth to fifth week after the initial dose of toxoid and again at the tenth to twelfth week. Antitoxin titrations were carried out by the intracutaneous method of Römer as modified by Fraser (3).

TABLE I

ANTITOXINOGENIC VALUE OF ALUM-PRECIPITATED TOXOID
Lot B22 (Single 1 cc. injection)

Name	Age	Dates Toxoid Injected	Serum Antitoxin Titrations				Schick Test	
			Date	Unit	Date	Unit	Date	Results
LMM	7	11-2-34	12-4-34	<0.01	1-18-35	<0.01	1-18-35	Neg.
VM	19	"	"	0.8	"	>0.1<0.2	"	"
MLC	16	"	"	>0.8<1.0	"	0.4	"	"
LT	17	"	"	2.0	"	>0.8<1.0	"	"
HH	13	"	"	1.5	"	>0.4<0.8	"	"
LA	19	"	"	0.08	"	>0.1<0.2	"	"
EW	20	"	"	0.04	"	>0.04<0.08	"	"
AP	21	"	"	0.04	"	>0.02<0.04	"	"
DD	18	"	"	>0.4<0.8	"	>0.1<0.2	"	"
UB		11-23-34	12-21-34	0.1	2-8-35	>0.03<0.06	2-15-35	"
ES		"	"	<0.01	"	<0.01	"	"
MF	13	4-11-35	5-9-35	<0.01	6-13-35	<0.01	6-13-35	"
AJP	27	"	"	<0.01	"	<0.01	"	Pos. 5mm.
DW	22	"	"	<0.01	"	<0.01	"	" 9mm.
LB	12	"	"	<0.01	"	<0.01	"	Neg.
WB	20	"	"	>0.02<0.04	—	—	—	—
CH	17	"	"	<0.01	"	<0.01	6-13-35	Neg.
DL	22	"	"	>0.02<0.04	"	0.04	"	"
LL	6	"	"	<0.01	"	<0.01	"	"
CT	21	"	"	>0.1<0.2	"	0.1	"	Pseudo.
JR	24	6-12-35	7-20-35	8.0	—	—	—	—
JP	14	7-10-35	8-28-35	<0.01	10-17-35	<0.002	—	—
EW	29	"	9-3-35	<0.01	—	—	—	—
GW	26	"	8-28-35	1.0	—	—	—	—
JK	10	7-18-35	"	<0.01	10-17-35	<0.002	—	—
GDR	15	"	"	0.04	—	—	—	—
DLR	10	"	9-11-35	<0.01	10-17-35	<0.002	—	—
GA	28	"	8-28-35	<0.01	"	<0.002	—	—
AM	8	"	"	<0.01	—	—	—	—
BN	14	7-31-35	9-11-35	<0.01	10-17-35	<0.002	—	—
CS	13	"	"	<0.01	"	0.008	—	—
TM	7	"	"	<0.01	"	<0.002	—	—
SAH	29	12-3-34	1-2-35	<0.01	2-12-35	<0.01	—	—
JLT	23	10-13-34	12-3-34	<0.01	1-17-35	<0.01	—	—

The level of antitoxin after two doses of plain toxoid (table II) is distinctly higher than after one dose of alum-precipitated toxoid (table I). If we accept the development of the arbitrary level of 0.01 unit as an index of antitoxinogenicity, it becomes obvious that 20 (80 per cent) of the 25 individuals of table II developed more than 0.01 unit of antitoxin as a result of two doses of plain toxoid, whereas only 15 (44.1 per cent) of the 34 individuals in table I developed more than this amount of antitoxin after one dose of alum-precipitated toxoid. This difference cannot be attributed to the slight difference in Lf. content of the two toxoids.

The small number of individuals who showed increased antitoxin titres at the second bleeding—5 (11.3 per cent) of the 44 persons tested—is significant

especially in view of the subsequent observations. In table III are given the antitoxin titres of six individuals who showed definite increases in blood antitoxin with no artificial antigenic stimulation except that three of them were Schick-tested about two weeks before the original titration. These six individuals represent 15 per cent of the total group (41) that was retitrated at from one to four month intervals without artificial immunization. Sub-

TABLE II

ANTITOXINOGENIC VALUE OF PLAIN TOXOID
Lot B22 (Two 1 cc. injections)

Name	Age	Dates Toxoid Injected	Serum Antitoxin Titrations				Schick Test	
			Date	Unit	Date	Unit	Date	Results
AD	7	11-2-34 11-23-34	12-4-34	<0.01	1-18-35	<0.01	1-18-35	Neg.
MBL	19	"	"	>0.8	"	>0.4<0.8	"	"
MA	16	"	"	<0.01	"	<0.01	"	"
LG	17	"	"	0.04	"	>0.04<0.08	"	"
OW	18	"	"	0.2	"	>0.1<0.2	"	"
MB	12	"	"	>0.03<0.06	"	>0.01<0.02	"	"
LAB	21	"	"	0.4	"	>0.1<0.2	"	"
ELB	9	4-11-35 5-2-35	5-9-35	>2.0<4.0	6-13-35	8.0	6-13-35	"
NIB	22	"	"	>0.01<0.02	—	—	—	—
HB	16	"	"	>1.0<2.0	6-13-35	1.2	6-13-35	"
VK	14	"	"	<0.01	"	<0.01	"	"
JP	10	"	"	1.0	—	—	—	—
RU	14	"	"	1.0	6-13-35	>0.4<0.7	6-13-35	"
JW	18	"	"	>0.02<0.04	"	>0.08<0.1	"	"
MW	21	"	"	2.0	—	—	—	—
HT	11	6-5-35 6-12-35	7-18-35	>4.0<8.0	8-28-35	>1.0<2.0	—	—
WVD	11	7-10-35 7-31-35	8-28-35	>1.0<2.0	—	—	—	—
RH	14	"	"	>0.1<0.2	—	—	—	—
FC	16	"	"	10.0	—	—	—	—
TF	21	7-18-35 8-8-35	"	>0.04<0.08	—	—	—	—
CC	14	"	9-11-35	<0.01	10-17-35	<0.002	—	—
TS	28	"	8-28-35	<0.01	"	<0.002	—	—
PW	22	"	"	>0.08<0.1	10-10-35	0.03	—	—
LL	21	7-24-35 8-15-35	"	>1.0<2.0	—	—	—	—
HF	7	"	"	>0.1<0.2	—	—	—	—

sequent work now in progress in the same institution has correlated in at least one case antitoxin increases with the appearance of a toxigenic strain of *C. diphtheriae* in the throat. In other cases showing antitoxin increases we have failed to culture toxigenic diphtheria bacilli, at least in so far as the usual toxigenicity tests on guinea pigs and rabbits are able to reveal toxigenic capacity. We are inoculating guinea pigs with live cultures of presumably atoxigenic strains of *C. diphtheriae* isolated from the throat of these individuals in the hope of being able to demonstrate antitoxin stimulation by these organisms.

The results recorded in table III, together with the reports of others (Dudley, 4, and Young et al., 5), and correlated with the low percentages in tables I and II showing antitoxin increases after the fourth to fifth week, indicate the desirability of using the shortest possible time for comparing the

antitoxinogenicity of various diphtheria antigens. The permanence of the immune state, of course, is extremely important, but in a diphtheria environ-

TABLE III

SERUM ANTITOXIN INCREASES WITH NO ARTIFICIAL IMMUNIZING STIMULUS

Name	Age	Schick Test		Serum Antitoxin Titrations			
		Date	Result	Date	Unit	Date	Unit
JB	8	11-30-34	Positive	12-13-34	<0.01	4-11-35	>0.08<0.1
GR	9	"	"	"	<0.01	"	>0.15<0.2
IBS	41	"	"	"	<0.01	"	>0.02<0.04
LS	17	"	Not Tested	5-9-35	<0.01	6-13-35	>0.08<0.1
PA	11	"	" "	4-11-35	0.16	"	>2.0<3.0
LW		"	" "	10-10-35	<0.01	11-14-35	2.0

ment this is likely to be decidedly affected by the phenomenon of herd immunization. Also it would appear advisable, especially when the test groups reside in institutions, to include control groups.

SUMMARY AND CONCLUSIONS

1. A comparison of the antitoxin response to one dose of alum-precipitated toxoid and two doses of plain toxoid has been made in persons having less than 0.01 unit original antitoxin. The alum-precipitated toxoid contained 15.5 Lf's per cc. and was prepared from the same lot as the plain toxoid (17 Lf's per cc.) used in this study.

2. Antitoxin titrations of serum show that the response to two doses of plain toxoid is distinctly better than the response to one dose of the alum-precipitated toxoid. Of those receiving one dose of alum-precipitated toxoid only 44 per cent developed more than 0.01 unit, whereas 80 per cent of those receiving two doses of plain toxoid developed more than 0.01 unit of antitoxin.

3. Only 11 per cent of those tested showed antitoxin increases at the ten to twelve week titration when compared with the four to five week titration. Fourteen per cent of a control group showed antitoxin increases in from one to four months with no artificial antigenic stimulus other than the Schick test (only half of those showing antitoxin increases were Schick-tested).

4. For the comparison of the antitoxinogenic value of diphtheria antigens it would seem advisable to establish as short a period as possible to measure the antitoxin response and to include a control group, particularly if the test group resides in an institution with a possible diphtherial environment.

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Overseas Immigration Medical Service

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As a result of the experience gained in immigration work before and immediately subsequent to the Great War, it was well known that a large number of physically and mentally defective immigrants were brought forward to the Canadian ports of entry in the hope that they would be admitted. This caused hardship to the immigrants when returned to their own country and was very embarrassing to the Canadian officials when appeals against rejection were strongly pressed from all quarters.

There was, in addition, an even more serious consideration: the large numbers deported after admission, at considerable expense to the country or the steamship companies, following the heavy cost of their upkeep, while public charges, by the provinces and municipalities in Canada.

As a consequence, when the Department of Health was formed in 1919, it was decided there should be some supervision of the medical examinations in Europe and a medical officer of the Service was posted to London in March, 1920, to advise the Immigration Department. Although a second medical officer was appointed in 1924 it was found that the advisory status of the Service was inadequate to achieve the desired result.

First Steps in Europe

After prolonged consultations with the parties interested in migration to Canada, the Departments of Immigration and Health decided that after January 31, 1928, all immigrants arriving at a Canadian port of entry must be examined prior to sailing and the Overseas Medical Service was inaugurated in the British Isles and on the continent of Europe in October, 1927.

The administration of the Service was centred in London where the senior medical officers act, in addition to the regular work of the Service, as advisers to the Immigration Department on all questions pertaining to the medical aspects of immigration.

The Service in Europe was easily formed, for all Continental migrants were required to obtain a visa from the Department of Immigration, and medical officers, stationed with their agents, conducted examinations at the various ports. Thus, all Canada-bound passengers from Europe passed through Paris, Antwerp, Rotterdam, Bremen, Hamburg, Danzig and Riga where medical officers had been stationed.

Early Arrangements in the British Isles

In the British Isles and the Irish Free State the situation was different. No immigration visa was required, and the service was commenced with the medical officers of the Overseas Service conducting examinations at stated intervals in centres so distributed over the country that an applicant was not required to travel more than fifteen miles for examination.

This system was augmented by the help of British practitioners who examined applicants for the Government in outlying areas where the numbers did not justify sending our own medical officers. Even before the end of 1928, owing to the heavy flow of emigration, it had been found necessary to concentrate our limited staff in more populous areas, extending the Roster Doctor branch of the

Service. Each report of the roster doctors was scrutinized by one of our medical officers before the applicant was accepted and further details were requested when necessary.

Changes Made Due to Reduction in Immigration

Then with the slump in migration as a result of the world depression, came a gradual cutting down of the personnel of the Overseas Service in the whole of Europe and a correspondingly large increase in the number of British doctors acting for the Department. At the present time we have three medical officers on the Continent instead of eight. In the British Isles the Department's medical officers have been completely withdrawn, with the exception of two in the central office in London. At the same time the number of places where local doctors are authorized to examine has been increased to 575. Except in heavily populated localities, each roster doctor is given an area of at least fifteen miles' radius in an endeavour to give him sufficient work to retain his interest and consequent efficiency in conducting examinations.

Some Results of the Work

The work of our Medical Service is based on an entirely different conception of medical examinations from that of the medical practitioner. A patient comes to him for help and offers unlimited assistance in the way of history of aches and pains, real or imaginary, physical or mental. We examine an unwilling witness who has no wish or desire to injure his case by disclosing what he would readily tell our practising confrères. We are, more or less successful, medical detectives.

While it is not humanly possible to detect every case of defectiveness, the close following of departmental instructions has resulted in a great number of diseases, defects and abnormal mental conditions being reported and the applicants barred from admission to Canada. During seven years of the Overseas Service, 2,454 were held and rejected on mental grounds and 2,242 on account of a loathsome, infectious or contagious disease. In addition, as a result of our examinations, 27,280 were certified as physically defective and only those with minor defects or those going to approved settlement conditions permitted to embark.

In each year since the Overseas Service commenced, there has been a marked decrease in the numbers of settlers deported on medical grounds for conditions originating prior to emigration. In fact, even with the years of depression and consequent incentive for reviving old illnesses and injuries, the percentage of deportations as a result of 402,164 examinations since October, 1927, is only 0.17. A large proportion of these were for conditions not detectable at the time of our examinations.

The Service insists on a thorough routine examination. Complete personal and family histories are obtained with particular reference to insanity, epilepsy, mental deficiency, tuberculosis, accidents, injuries, and illnesses of any kind. All applicants are required to strip to the waist and remove shoes and stockings. The examination of men is carried further by dropping the trousers to the ankles, but women are not more completely undressed unless there is some indication of the necessity for further investigation. Careful examination for diseases of the central nervous system, lungs, heart, blood vessels, skin, and special senses is done. Particular attention is paid to the presence of physical defects, special care being taken with the feet and legs.

Persons who are of abnormal mentality, or have been previously insane, who are epileptics or of constitutional psychopathic inferiority, are prohibited entry into Canada. The mental examination of applicants varies according to the reaction obtained to questions asked during the preliminary interrogation and physical ex-

amination. When any doubt is raised in the examiner's mind, a most careful and thorough investigation is carried out. If the examiner is not satisfied that the applicant is normal, the case is deferred and re-examined at a later date with the collaboration of a colleague if possible.

Before an applicant is certified as mentally defective or as suffering from a definite psychosis, a second examination is always conducted, and if necessary a report is requested from a psychiatrist. The rejection of mental defectives is based on the result of their examination for general knowledge, retentiveness of memory, reasoning power, learning capacity, general reaction, and set intelligence tests, *i.e.*, Binet-Simon and Vermeylen tests.

Persons afflicted with tuberculosis in any form or with any loathsome, contagious or infectious disease, are debarred from entry unless such disease is curable within four or five weeks.

As our medical officers are not expected to be specialists, an applicant with a history of, or suspected to be suffering from, tuberculosis is sent to a tuberculosis officer or chest specialist for clinical examination and x-ray. Certifications are based on the reports received.

An applicant who has suffered from tuberculosis and is apparently cured is deferred for five years to date from the time he or she was stated to be apparently cured. Any applicant who is then examined is certified as physically defective owing to the possibility of recurrence of this disease and only under special circumstances permitted to proceed to Canada.

Trachoma has caused us great trouble in the past but little now, for the doctors, acting for the steamship companies in the interior of Europe, have at last become conversant with our requirements and hold the cases until cicatrisation is complete. To further safeguard Canada, an applicant previously certified as suffering from trachoma is not passed finally until six months have elapsed after being found apparently cured and only then if there has been no recurrence of the disease.

Before an applicant with clinical evidence of infection or with a history of syphilis is passed, he must have received adequate treatment and present negative Wassermann reports every three months for one year after cessation of treatment and after two years a negative cerebrospinal fluid Wassermann. Disabilities resulting from scarring of the viscera are certified under the physically defective clause when the Wassermann is negative.

An applicant suffering from gonorrhoea is not passed unless there is a total absence of clinical signs or symptoms for a period of two months after cessation of treatment and smears taken on four separate occasions at monthly intervals are negative for gonococci.

Applicants who have been employed in dust-producing occupations are required to submit x-ray films together with a report from the radiologist to guard against the entrance into Canada of cases of pneumokoniosis in any form.

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A. L. McKay, B.A., M.B., D.P.H., *Epidemiology and Vital Statistics.*
A. L. MacNabb, B.V.Sc., *Laboratory.*
Gordon Bates, M.B., *Social Hygiene.*
E. W. McHenry, M.A., Ph.D., *Food, Drugs and Nutrition.*
Mary Power, B.A., *Public Health Education.*
A. H. Sellers, B.A., M.D., D.P.H., *Books and Reports.*
D. T. Fraser, B.A., M.B., D.P.H., *Mental Hygiene.*
A. E. Berry, M.A.Sc., C.E., Ph.D., *Public Health Engineering.*
Laura A. Gamble, Reg.N., *Public Health Nursing.*
J. G. Cunningham, B.A., M.B., D.P.H., *Industrial Hygiene.*
James Craigie, M.B., Ch.B., Ph.D., D.P.H. St. And., *Current Health Literature.*

ONE DOSE OF ALUM-PRECIPITATED DIPHTHERIA TOXOID

ALUM-PRECIPITATED toxoid is still a topic of interest. In this issue the results of a study by Schuhardt and Cook of Texas appear, in which a comparison is made between the antitoxin response in human beings to one dose of alum-precipitated toxoid and two doses of fluid or unmodified diphtheria toxoid. This investigation in many respects parallels that of Fraser and Halpern, the findings of which were published in the October issue of this journal for 1935. The subjects were carefully selected, the two antigens in each study were prepared from the same original lot of toxoid of satisfactory potency, the antitoxin titrations were carried out upon the serum of the subjects before and after the injections of toxoid were given. In studies of this character the Schick test is obviously of no value since the point at issue is the comparative value, under the conditions imposed by the experiment, of the two antigens in eliciting antitoxin. This cannot be quantitatively determined except by titration. The findings of Schuhardt and Cook are similar to those of Fraser and Halpern. Taking one one-hundredth of a unit of antitoxin per cc. of serum as a basis of comparison, one dose of alum is much inferior to two doses of unmodified toxoid. In the one dose group of the Texas study, 44 per cent of the sera were above this level in four to five weeks in contrast to 80 per cent in the two dose unmodified toxoid group. In the one dose group in the Toronto investigation, 62 per cent of sera showed more than one one-hundredth of a unit; 91 per cent of the sera were above this level in the three dose group. Naturally, one may confidently expect that three doses of a given antigen will call forth a better response than will two. The Toronto study showed further that though the level of antitoxin tended to drop within a year the decrease was much more evident in the alum-treated subjects than in the unmodified. Even granted that the rate of loss in antitoxin is equal in both groups, as it may indeed be since the numbers are too small to accept the contrary without reserve, the drop to a critical level, say less than one one-hundredth of a unit, will be sooner attained in the alum group since the levels of antitoxin are lower after immunization than in the three dose group. In general, the higher the level of antitoxin the longer will it take to drop below the critical level which

affords protection against diphtheria, whatever that level may be assumed to be. Schuhardt and Cook emphasize the importance of knowing whether the experimental subjects are living in a diphtheria environment or not. Obviously this factor must be assessed by the most careful bacteriological investigation. Neither the Texas nor the Toronto studies pretend to answer the question as to whether, under field conditions, one dose of alum or multiple doses of unmodified toxoid are equally effective in preventing diphtheria. The answer to this important question will come from an exacting epidemiological study carried on under field conditions over a period of several years.

There is a remarkable remission in the incidence of diphtheria in northern areas of America. This remission is often synchronous with the intensive immunization. Because of these facts, in the United States, where alum toxoid has been extensively used, it may be many years before epidemiological studies will give the final answer whether one dose of alum is an effective means of preventing diphtheria. In the meantime laboratory studies of the character presented by the Texas and Toronto investigators are of interest in supplying evidence that the antitoxin response in human beings is greater with multiple doses of unmodified toxoid than with one dose of alum-precipitated toxoid.

THE ACCIDENT PROBLEM: AN OPPORTUNITY AND A RESPONSIBILITY

THE toll of injury and death by accident continues unabated. At ages 5 to 14 years, accidents rank first as a cause of death in Canada. From age 15 to 49 inclusive, only tuberculosis exceeds it in importance, and at all ages 5 per cent of all deaths are attributed to accidental causes. It is, of course, to automobile accidents that greatest public attention is drawn and it is in this field that the situation is perhaps most urgent. Three-quarters of deaths in motor accidents are in persons under 60 years of age, and besides this mortality, for every person killed about 20 persons are injured, some of them for life. Furthermore, the persons injured or killed in accidents are in the main healthy individuals!

Why do accidents occur? The derivation of the word accident indicates that it was formerly employed to denote an event unpreventable and unforseen, or due to chance. This conception is still widely held in the public mind, but the sooner the conception of accident as a chance or unfortunate event, the result of "bad luck", etc., is discarded, the better. Scientific evidence has shown that many accidents have an explanation in physiological and psychological defects or maladjustments and inadequacies of the persons involved. Once the relative importance and the character of the various causes of accidents are determined, the solution would become clear and there is no doubt that "the human factor" is one to which increasing attention must be paid.

As a result of our ignorance in regard to the underlying factors involved in accidents, the methods of prevention and control which have been employed have lacked any semblance of the scientific approach which is so necessary to success. It may perhaps be said that present efforts have sufficed to keep

the toll from rising much higher, but something more needs to be done. If a practical scheme for predetermining those persons who are accident-prone can be devised, such persons should not be allowed to operate a motor vehicle. Speed itself, which is indirectly or directly the determining factor in many accidents, must be kept under control. These and other measures, including an extension and improvement of present methods of safety education throughout every community, must be pursued with infinite zeal and expedition.

In many countries, various degrees of physical examination of drivers have been employed as a control measure. But by their very nature such routine examinations must fail because although they eliminate persons who are a menace both to themselves and to others as drivers of motor vehicles because of manifest physical defect or disease, they fail to take account of such important psychophysical factors as reaction time, judgment of space and size relationships, etc., which have been shown to have a fundamental bearing on accident phenomena. Just how feasible a scheme of examination of drivers on such a basis would be cannot at once be stated.

The burden of measures for the control of accidents up to the present has rested essentially upon education and traffic regulations. These efforts have been vigorous and sincere but much of education falls by the wayside and many traffic regulations are broken, and the rising toll in death and injury continues. Does this alone not indicate that ignorance, carelessness, or lack of a "safety consciousness" are not the underlying causal factors in accidents? Does the present trend in motor accident mortality and morbidity not assure us that present efforts are inadequate? With increasing miles travelled, increase in number of cars and operators, we expect the accident rate to increase, and it has been increasing and will continue to do so. We cannot limit these factors, but present knowledge does indicate that the various phases of human "susceptibility" *can* be investigated, adjusted, and at least some degree of control exercised in these channels.

At the moment there is no reason why we may expect the present situation to become less acute in the next few years. Rather, unless something is immediately done about it, we may expect this appalling destruction of human life to continue. These facts in themselves demand that even more serious and more intensive efforts be made toward evolving some practical and scientific scheme for the control of this scourge. Public health workers can no longer stand on the sidelines on this question.

Dr. Burnette's paper in this issue constitutes a specific call to the Canadian Public Health Association to consider definitely present needs from the public health standpoint in Canada. It is hoped therefore that action may be taken at the forthcoming annual meeting through the appointment of a special committee for the study of this pressing problem. The entry of public health groups into the field of accident prevention has been delayed long enough. The accident problem presents a new opportunity and responsibility to all who realize the scientific truth of the statement that a large proportion of accidents are preventable.

A.H.S.

REPORTS FROM THE ANNUAL MEETING*

Part I

REPORT OF THE GENERAL SECRETARY
1935-1936

THE post of Secretary in an organization of this type carries with it privileges and prerogatives as well as responsibilities; in fact, one is, on occasion, inclined to the view that the former outweigh the latter. The increase in privileges is in direct ratio to the length of the tenure of office. The privilege of association with those who have given much to the cause of public health and preventive medicine in Canada; the privilege of friendly contact with those who have much to give; the right to be both intro- and retrospective —these are some of the intangible perquisites of this office. I wish here to exercise the last mentioned prerogative. For over twenty-five years the Canadian Public Health Association has attempted to approximate its objectives. While on occasion the enthusiasm of those directionally responsible may have flagged, such success as it has attained has been due to the ready revival of such enthusiasm following the few periods of depression, and its maintenance at extraordinarily high levels when such periods had passed. Particular reference must be made to the contribution to the Association's success during the last ten years by Dr. R. D. Defries, assisted during the last four years by the Secretary of the Editorial Board, Mr. R. L. Randall.

Since its inception, the Association has been hampered by lack of funds. The Association's officers have carried forward the original purposes of the Association in spite of this handicap but it has been necessary on many occasions to lay aside plans of great promise, because of the lack of adequate financial support. The seriousness of this handicap has been the subject of reference in former reports.

Eight years ago the Association, after a most careful study of the needs in public health work, decided that it could make the most effective contribution by serving primarily as the professional society of those engaged in public health work, including physicians, public health nurses, statisticians, public health engineers, and those whose field of work lay in public health chemistry, bacteriology, or pathology. The redefining of the Association's work did not imply in any sense a disavowment of its original purpose but rather a re-interpretation of its function in the light of existing needs.

Through voluntary services freely given, the Association has in the past

**Presented at the Twenty-fifth Annual Meeting of the Canadian Public Health Association, Vancouver, B.C., June, 1936.*

few years undertaken new responsibilities, the extent of which the membership as a whole is probably unaware. The publication of the JOURNAL, representing a volume of more than 600 pages of scientific articles, together with all the detail of its circulation and support; the certification of sanitary inspectors, involving the establishing of standards, the holding of examinations, and the issuing of certificates; and the conduct of an annual Christmas meeting of the Laboratory Section, which has become recognized as the occasion for the presentation of new work in the fields of bacteriology, pathology and public health chemistry by members throughout Canada, are several of the responsibilities undertaken in recent years. Arrangements for the annual meeting of the Association, constituting a national health convention, and the activities of national committees including the committees on housing, duties and remuneration of health officers, and milk control, are further responsibilities. In addition there are a number of committees of the Sections of Vital Statistics and Epidemiology, Public Health Nursing, Public Health Education, and the Laboratory Section, conducting important studies.

This mention of the extent of the Association's work is desirable in order that the urgency of the need for adequate financial support may be considered by the Executive Council at this annual meeting. The taking over of the JOURNAL in 1928 brought new responsibilities but little in the way of increased revenue. To-day the JOURNAL is accepted among the leading publications of its kind. It is filling an irrefutable need in Canada; yet your Editorial Board are confronted with almost insurmountable difficulties in its continued support. It is evident also that in fairness to the services so freely given by members of the national committees and the officers of the various Sections, office assistance must be provided to facilitate their work.

The growth of the Association is well reflected in the encouraging growth of its membership, reaching the figure of 2,700.

The Section of Vital Statistics and Epidemiology has brought together the provincial registrars, statisticians and medical officers of health of the larger city departments, and members of university faculties with members of the Dominion Bureau of Statistics and the Department of National Health for the conduct of studies bearing upon the most important problems in vital statistics. To this group have been added this year actuaries and medical officers of the leading Canadian life insurance companies. The Section is therefore affording the opportunity for the gathering of opinions of experts in all parts of Canada, making possible recommendations to the Dominion Bureau of Statistics, with the Department of Pensions and National Health, concerning matters relating to the new death certificate, stillbirth registration, allocation of deaths according to residence, etc.

Illustrative of the place of the Section is the action taken in regard to the forthcoming decennial revision of the International List of Causes of Death. As the preliminary conference is being held this fall in Europe, the Section convened a special conference in Toronto on May 4th and 5th for the consideration of a report prepared by the Committee on the Certification of Causes of

Death. Invitations were extended to the life insurance companies and several papers were presented at the formal sessions by leading representatives. After careful consideration of the reports presented, the conference embodied their recommendations in formal resolutions which were presented to the proper authorities in Ottawa. Letters received from various insurance companies indicated their interest in the Section's studies and their willingness to join in every way possible in the effort to strengthen vital statistics in Canada.

The holding of the fourth Christmas meeting of the Laboratory Section in Toronto on December 30th and 31st with more than ninety members in attendance from Vancouver, Winnipeg, Halifax, Saint John, Quebec, Montreal, Hull, and many centres in Ontario, indicates that such a meeting is affording a welcome opportunity to those who are interested in bacteriology, pathology, and public health chemistry to present new work in these fields. The Section is therefore serving as the Canadian society of bacteriologists and others who are particularly interested in public health. The Christmas meeting, with the subsequent publication of many of the papers in the JOURNAL, is making possible the presentation of valuable contributions from laboratories throughout Canada. It also provides the opportunity for the full discussion of the findings of the various committees of the Section whose studies have a practical bearing on the everyday work of the members.

The work of the committees of the Section may be mentioned. It is considered desirable to have standard methods for water and sewage analysis and for milk, approved for use in Canada and constituting Canadian standard methods. For several years a committee of the Section has been engaged in the study of this question. Last December the Section published outlines of new laboratory procedures which have been investigated and recommended for trial. The committee which has been studying the types of laboratory outfits which are distributed by various provincial and municipal departments of health for the collection and transmission of specimens has indicated how savings may be made by the ntroduction of simpler containers which would prove equally satisfactory but considerably cheaper. It is obvious that the Section is making practical contributions which will be appreciated by health administrators as well as by those who are responsible for the immediate direction of laboratory work.

The Association recognized the efforts and achievements of two of its membership and one outstanding administrator in the public health field from our neighbouring country, by conferring honorary life membership on Dr. H. W. Hill, Dr. M. S. Fraser, and Dr. H. S. Cumming, the recently retired Surgeon General of the United States Public Health Service.

Your Executive Committee has met on three occasions during the year and has attempted to dispose satisfactorily of such matters referred to it by Council and those that have arisen during the year.

While reference will be made in the report of the Editorial Board to the death of Dr. Roy McClenahan, my predecessor in office, in view of the circumstances special comment is warranted in this report. Dr. McClenahan's

interest in this Association was constantly maintained during the eleven years of his illness.

I should also like to make special reference to the continued financial support of the Canadian Life Insurance Officers' Association. The grant of $1,000 given last year was awarded the Association again in 1936. This tangible evidence of interest by this body is more than appreciated by your officers.

In conclusion, I want to thank the members of the Executive Committee for lightening the load of office since my assumption of additional responsibilities within the Department.

J. T. PHAIR, *General Secretary.*

REPORT OF THE HONORARY TREASURER
1935-1936

FOR the first time as Honorary Treasurer of the Association I regret to report that the Association completed its financial year as of December 31, 1935, with a deficit in its operations. Although the amount of the deficit fortunately is not large, it reveals a situation which is most serious. Unless action is taken by the Association either to curtail its program, including the publication of the JOURNAL in its present form, or to obtain additional revenue, the Association will shortly find itself in a position in which it is unable to continue.

It is indeed with great regret that this statement is made because during the past year the work of the Association has been vigorously conducted and it may be fairly said that at no time in the Association's history has its work been so well recognized and appreciated. The growth of the work is reflected in such undertakings as the certification of sanitary inspectors in Canada, involving the holding of examinations in various provincial centres and the issuing of certificates; the functioning of five important committees of the Laboratory Section dealing with standardization of methods and other pertinent subjects; the regular holding of the Christmas laboratory meeting; the studies of four committees of the Section of Vital Statistics and Epidemiology, and of national committees on housing, safe milk, rural health administration, and the status of the medical officer of health; as well as in the steadily increasing volume of correspondence relative to the various Sections of the Association, including the activities in public health nursing and public health education. Further improvements in the JOURNAL during the first few months of 1936 and the addition of a considerable number of new subscribers are reflected in increased printing and mailing costs.

The increased activity during 1935 would not have been possible financially had it not been for the valued support of the Canadian Life Insurance Officers Association in granting one thousand dollars towards the work of the Association. The making of this grant has been a source of real encouragement to the officers of the Association and particularly to the Section of Vital Statistics and

Epidemiology. A special conference was recently held by this Section to consider plans whereby statistical studies of mutual interest might be undertaken.

The entire work of the Association is conducted without salaried officers. The expenditures of the Association therefore relate primarily to the publication of the JOURNAL and to the holding of the annual meeting. Of the total expenditure of $7,493.33, $5,843.95 was expended for the publication of the JOURNAL —approximately 75 per cent of the total expended. Although an increased number of JOURNALS was printed, the publishing cost was only $77.00 greater than the charges during 1934, reflecting great credit on the Editorial Board for its effort to publish the JOURNAL at the very lowest cost. The advertising revenue showed a reduction of $832.51 and there was also a slight reduction in the income received from subscriptions; namely, $159.28. There was, however, an increase in the number of subscribers of approximately 2 per cent, the loss in revenue being accounted for by a larger number of subscriptions for medical officers of health and students at the special rates. The subscription list of the JOURNAL as audited at December 31, 1935, was 3,129, being a net increase of 67 over 1934.

The twenty-fourth annual meeting was held in conjunction with the Canadian Tuberculosis Association, the Ontario Health Officers' Association, and the Canadian Social Hygiene Council in Toronto in May. The meetings extended over four days and special features included public meetings in the evenings and scientific exhibits which also were open to the public in the evenings. To meet the expenses of the meeting and of the large section of scientific exhibits, a section of commercial exhibits was provided, the revenue from which amounted to $1,018.75. The total cost of the convention was $1,427.77, making a net cost of $409.02. This amount, however, included $190.00 for the publication of the annual reports of the Association, leaving the net cost of the meeting as $210.00. Included in this figure are such items as the preliminary and final programs, advertising and publicity, and travelling expenses of speakers. Few associations could arrange meetings with such a minimum expenditure.

As the major expenses in connection with the work of the Committee on the Certification of Sanitary Inspectors, including the holding of the examinations, were not incurred in this year but will appear in the report for 1936, no indication of the actual cost of this activity of the Association is given in the expenditures of 1935.

In view of the present financial position of the Association, representations were made to the Dominion Government for a grant towards the work of the Association in 1936. This matter was formally presented by the General Secretary. Although the request was received with consideration, no grant was made. It is therefore incumbent on the Association to urge again upon the Government further consideration and to take such steps as will ensure a thorough understanding of the Association's request.

Of necessity the Association must consider further the matters presented in my report for last year as relating to possible revenue through sustaining

memberships, the charging of a registration fee at the annual meetings, and the adoption of a policy of providing commercial exhibits in connection with the annual meetings. It is gratifying that the Local Committee on Arrangements for the 1936 meeting in Vancouver has adopted a registration fee and provided a source of revenue through a section of commercial exhibits.

The Association gratefully acknowledges the co-operation of the Health League of Canada for use without charge of office space and other facilities, and also the assistance of officers of that organization without remuneration. To the Provincial Department of Health of Ontario and the School of Hygiene, University of Toronto, the Association's thanks are due for services similarly rendered and for their continued manifestation of interest.

The audited statements for the year ending December 31, 1935, are appended.

TO THE OFFICERS AND MEMBERS OF
THE CANADIAN PUBLIC HEALTH ASSOCIATION

We report that we have made an examination of the books of account of the CANADIAN PUBLIC HEALTH ASSOCIATION for the period of Twelve Months ended December 31, 1935. We completed the writing up of the books and drew therefrom the Trial Balance as at December 31, 1935; calculated the amount of unexpired subscriptions from the list thereof supplied us, and prepared the following appended exhibits:

Exhibit 1—Balance Sheet as at December 31, 1935.
2—Statement of Income and Expenditure for the year ended December 31, 1935.

CERTIFICATE

We hereby certify that the Balance Sheet appended as Exhibit 1, and the related Statement of Income and Expenditure, Exhibit 2 hereto, are in our opinion properly drawn up so as to exhibit a true and correct view of the affairs of the Association as at December 31, 1935, according to the best of our information, the explanations given us, and as shown by the books of the Association.

All of which is respectfully submitted.

TORONTO, APRIL 15, 1936. (*Signed*) SEBURN, FERGUSON & BAKER,
Auditors.

BALANCE SHEET
DECEMBER 31, 1935 Exhibit 1

ASSETS

Current Assets:			
Cash on hand and at Bank		$1,008.80	
Accounts Receivable—Advertising	$ 322.62		
Subscriptions	1,012.66		
Reprints	48.54		
Miscellaneous	75.00		
Total	$1,458.82		
Less: Reserve for Doubtful Accounts	42.85		
		1,415.97	
Deposit with Postmaster		15.00	
Deferred Charges		53.29	
TOTAL CURRENT ASSETS			$2,493.06
Investments:			
Province of Ontario Bonds—at cost		$1,012.50	
TOTAL INVESTMENTS			1,012.50
Fixed Assets:			
Canadian Public Health Journal		$1,000.00	
Office Equipment		35.00	
TOTAL FIXED ASSETS			1,035.00
TOTAL ASSETS			$4,540.56

LIABILITIES AND SURPLUS

Current Liabilities:		
Accounts Payable	$1,230.87	
Prepaid Subscriptions	349.18	
Honoraria Payable	400.00	
Accrued Commissions and Expenses	29.15	
Advertising Billed in Advance	90.00	
TOTAL LIABILITIES		$2,099.20
Surplus—January 1, 1935	$2,534.97	
Add: Honorarium (1933) Cancelled	200.00	
Together	$2,734.97	
Deduct: Deficit for year ended December 31, 1935	293.61	
SURPLUS—December 31, 1935		2,441.36
TOTAL LIABILITIES AND SURPLUS		$4,540.56

Attached to and forming a part of our report dated April 15, 1936.

STATEMENT OF INCOME AND EXPENDITURE

Exhibit 2

FOR TWELVE MONTHS ENDED DECEMBER 31, 1935

INCOME

Advertising	$3,226.22	
Subscriptions	2,845.12	
Canadian Life Insurance Officers Association	1,000.00	
Miscellaneous Income	128.38	
GROSS INCOME		$7,199.72

EXPENDITURE

Printing	$4,545.80		
Cuts and Sundries	189.09		
Postage on Magazines and Mailing Cost	595.27		
Commissions	366.08		
Advertising and Promotion Expense	50.00		
Discounts allowed and Bank Exchange	85.06		
Reserve for Bad Debts	12.65		
		$5,843.95	
Honoraria		477.00	
Salaries		165.00	
Stationery and Office Supplies		185.28	
Postage and Telegraph		235.78	
Miscellaneous Expense		142.96	
Convention Meetings Expense	$1,427.77		
Less: Receipts therefrom	1,018.75		
		409.02	
Laboratory Section Expense	$ 92.02		
Less: Receipts therefrom	59.50		
		32.52	
Sanitary Inspectors Section Expense	$ 101.82		
Less: Receipts therefrom	100.00		
		1.82	
TOTAL EXPENDITURE			7,493.33
NET INCOME—for year 1935—carried to Exhibit 1			$ *293.61*

Attached to and forming a part of our report dated April 15, 1936.

C. P. FENWICK, *Honorary Treasurer.*

REPORT OF THE CHAIRMAN OF THE EXECUTIVE COMMITTEE

THE General Secretary has presented in his report a résumé of the Association's activities during the past year and has referred to the meetings of the Executive Committee, which committee is responsible for the conduct of the affairs of the Association between annual meetings. As chairman of the committee, it is my duty to urge on the Executive Council consideration of the urgent financial position of the Association. A review of the extent of the Association's activities and of the responsibilities which it has assumed and is so successfully discharging reveals at once a situation which demands action.

As an association, we are indeed fortunate that for more than half of the history of the Association we have had the privilege of having as General Secretary Dr. J. T. Phair. Since assuming his duties in 1922 at the annual meeting which was held in Saint John, he has continued to serve in this office. At every annual meeting of the Executive Council, expressions of appreciation have been tendered to him and he has been persuaded to continue in office. We are also greatly indebted to Dr. C. P. Fenwick, as Honorary Treasurer, for his continued interest in the Association.

The JOURNAL is recognized throughout the continent as an outstanding scientific publication reflecting the progress of public health in Canada. It is indeed an achievement that its circulation has been more than doubled since the Association assumed its publication in 1928. Its continued publication, as outlined in the report of the Editorial Board, rests upon a solution of the present financial situation. To Dr. R. D. Defries, who as Chairman of the Editorial Board has so largely made possible this effort, and to Mr. R. L. Randall as Editorial Assistant the Association is deeply indebted.

W. J. BELL, *Chairman, Executive Committee.*

REPORT OF THE EDITORIAL BOARD
1935-1936

IN presenting the eighth annual report of the Editorial Board, it is well to recall that it concerns the publication of the twenty-sixth volume of the JOURNAL. The history of the JOURNAL falls into three periods: the first when it was privately owned, during which time the Association had no direct responsibility; the second under the editorship of Dr. Gordon Bates who, supported by a small group of members of the Association, made possible its continued publication in 1918 under the charter of the original company; and the third period commencing in 1928, when the Association assumed the responsibility for the publication of the JOURNAL and appointed the present Editorial Board.

When appointed, the Editorial Board believed that within two or three years the Association would be in a position to appoint an editor, with at least one full-time office assistant. It has indeed been a great disappointment that the budget has been so restricted due to the absence of government and other grants that it has not been possible to employ even one full-time office assistant. On two occasions appointments were made but it was not possible to continue such services for more than a few months. The work of the Association as a whole has been conducted under great difficulties by the various members, utilizing their own office personnel and arranging for a large part of the conduct of the work out of regular hours. Viewing the accomplishments of the past eight years in the light of the existing facilities, the Board has a measure of satisfaction.

Although expressions of appreciation have been received as to the value of the JOURNAL and its increasing importance as a scientific medical publication in Canada, yet eight years have passed and it now appears that the essential office services cannot be provided unless the Association receives financial support in the form of government or other grants. The burden has been carried by the Editorial Board but the amount of voluntary service required cannot be expected to be rendered indefinitely. To publish an annual volume of more than six hundred pages of scientific articles with editorials, comments, and reviews, as well as to be responsible for the financing of the publication through the solicitation of advertising, the collection of subscription fees, and the attendant correspondence without office assistance is an undertaking which this Association should not expect the Editorial Board to assume. The matter of financial support is presented by the Treasurer in his report and needs no further emphasis.

During the year 1935 eighty-five articles and twenty-three editorials were published. Thirty-nine books were reviewed and thirty-eight articles published in other journals were abstracted. In addition 47 pages were devoted to reports from the annual meeting. The series of historical articles on the development of public health in the provinces of Canada has been continued and will be completed shortly. During the year outlines of the organization in Alberta, Manitoba, Ontario, New Brunswick, and Prince Edward Island were published. The Editorial Board recommends heartily that this series of twelve articles should be reprinted and made available in the form of a small volume of approximately 125 pages. The articles are available in type and the preparation of the volume would not entail a large expense. The volume would be of very real interest and of practical value to all students in public health. In August the paper, "Contributions to the Laboratory Diagnosis of Amoebiasis from the Chicago Outbreak of 1933", was issued as the fourth in the Association's Reprint Series.

One of the contributions which is particularly appreciated is the quarterly Letter from Great Britain on public health developments. The Board is deeply grateful to Dr. George F. Buchan, Medical Officer of the Willesden Urban District Council, Kilburn, London, for these excellent letters which he has prepared during the past three years. They have kept health officers in Canada

closely in touch with public health progress in Great Britain. The continuation of the contribution by the Department of Epidemiology and Biometrics, University of Toronto, presenting the endemic index for diphtheria, scarlet fever, measles, and whooping cough in the provinces of Canada is appreciated by the Board and it is believed that this method of indicating the trend of incidence is of great interest to health officers.

During 1935 the format of the JOURNAL was carefully studied and in January, 1936, changes were made in the cover design and the type arrangement. To afford the opportunity for presenting short accounts of local health programs, a section entitled "Plans, Programs, and Progress" was introduced in February. The Board is indebted to Dr. P. A. T. Sneath, Toronto, for contributing a new section of "Current Public Health Comment" which first appeared in the March issue. News of the Association is now being presented monthly in a special section which brings to the membership the work of the Association, brief reports of committees, and announcements of meetings, etc.

The printing costs, exclusive of mailing charges and postage, were 12.8 cents a copy in 1935, as compared with 12.3 cents in 1934 and 13.5 cents in 1933.

Circulation

One of the gratifying features of the JOURNAL since its publication was assumed by the Association is the steady increase in its circulation. In 1928 the circulation was practically 1,500 and in 1935, 3,129. This has been accomplished by a continuous effort to acquaint those interested in public health in Canada and other countries with the JOURNAL. This year, as a result of a special effort, twelve libraries in the United States and thirty-four libraries in other countries have been added. When it is remembered that the policy of the Association is to discontinue sending the JOURNAL to persons whose subscriptions are in arrears, the steady net increase in the circulation indicates appreciation of the JOURNAL.

It is of interest to record also that approximately 250 medical students and public health nurses in training are receiving the JOURNAL on the special subscription basis which was introduced in 1932. Although the amount of the subscription is only a small part of the cost of the JOURNAL, the Editorial Board believes that this is an essential part of the work of the Association in supplementing by the many important articles published in the JOURNAL the instruction received in preventive medicine and hygiene in the various faculties. The value of the JOURNAL will be appreciated by a steadily increasing number of physicians as a result of this plan.

Advertising

The Board regrets that there was a reduction of $832.51 in the advertising revenue of the JOURNAL during 1935. An intensive effort has been made during the past years to present the merit of the JOURNAL to a large group of national advertisers in Canada and the United States. In 1935 more than 1,000 letters

were sent, together with printed material presenting the circulation, field of the JOURNAL, etc.

In spite of the active steps taken and the solicitation made directly by members of the Editorial Board, it has been found increasingly difficult to obtain adequate advertising support. Much would be accomplished in the practical support of the JOURNAL if the readers would indicate their interest by mentioning the JOURNAL when communicating with those advertising. An advertising representative for Ontario has been appointed by the Board and it is believed that the presentation of the JOURNAL by this representative will result in an increased amount of advertising. Arrangements were completed also with representatives in London, England.

In July the Board suffered the loss of one of its most faithful members in the passing of Dr. Roy Robert McClenahan, who, although confined to hospital for almost the entire period of his association with the Editorial Board, continued his supervision of the department of Books and Reports. The resignation in March, 1936, of Miss C. Ethel Greenwood, who for two and a half years gave generously of her time in the preparation of material relating to public health nursing, was received with great regret. The Board has had the pleasure of welcoming Miss Laura A. Gamble as Miss Greenwood's successor.

During these years the continued publication of the JOURNAL has been made possible by the united support of the nine provincial departments of health, in spite of the existing financial stringency, in enrolling all health officers as members of the Association. The confidence thus expressed in the Association to publish a journal of real value to medical officers of health has been a constant stimulus to the Editorial Board to give, month after month, the increasing amount of time and effort demanded in the publication of the JOURNAL. Although the special fee of $1.00 represents approximately one-half of the actual cost of publication, payment of the fees of the 2,000 health officers in Canada by the provincial departments has been sufficient, when supplemented by the advertising revenue and regular membership fees, to maintain its publication. The forced withdrawal of any of the provincial departments would seriously jeopardize the JOURNAL in the present financial position of the Association.

In view of this situation, as revealed by the reports of the General Secretary and the Honorary Treasurer, it is urgent that definite action be taken to assure the continuance of the JOURNAL.

In closing I wish, on behalf of the Editorial Board, to express hearty appreciation of the invaluable services rendered by Mr. Robert Randall as Editorial Assistant.

R. D. DEFRIES, *Chairman.*

CURRENT PUBLIC HEALTH COMMENT

P. A. T. SNEATH, M.D., D.P.H.
Toronto

LEGISLATIVE AUTHORITY FOR HOUSING REFORM

UNIFORMITY in the matter of housing reform in Canada would be desirable, but presumably this is restricted by an "omnibus" clause in the British North America Act of 1867, Sec. 92(16), bringing within the exclusive powers of the Provincial Legislatures "generally all matters of a merely local or private nature in the Provinces." Notwithstanding this, as a result of the findings of a Royal Commission in 1919, a Housing Committee of the Dominion Cabinet with the Committee on Conservation outlined a general housing scheme which was implemented by an appropriation of $25,000,000. This sum was apportioned out as a loan to the provinces, and they in turn divided the loan amongst a total of 179 municipalities, thereby providing assistance in the construction of new housing for some 32,000 persons. The loans so made were for a twenty-year period at an interest rate of 5 per cent.

Last year, the Dominion Housing Act, 1935, was placed on the Statutes to deal further with this problem. The Economic Council for Canada (the authority for the organization of which has since been repealed) was empowered to initiate investigations relative to ensuring the soundness of any national housing scheme that ultimately might be developed. Meanwhile, the Minister of Finance with a designated appropriation of $10,000,000 was authorized to enter into contracts with local authorities or approved lending institutions for the loan of sums of money (up to 80 per cent. of the construction costs or appraised value of the property, whichever is the lesser), to assist prospective owners or builders in the construction of housing accommodation. In practice the individual loan will be secured by a first mortgage on the property over a period of 10 years (renewable for a second term), held conjointly by the Crown and the lending institution or local authority, the mortgagee making monthly payments that will cover the interest on the loan, the repayment of principal, and estimated taxes on the property. Although some provision is made for controlling the standards of construction, it will be noted that the assistance afforded through this legislation is chiefly concerned with increasing employment in the building trades, and some increased activity in the financial houses involved. Since no limit was placed upon the costs of the structures to be financed, it is of direct benefit to the financially solvent members of the community, and in consequence affords only a hypothetical contribution to that section whose housing must be considered as of a sub-economic nature.

The creation of a centralized plan of this character in 1935, under which financial assistance is more directly controlled than in 1919, gives some promise for the development of a similar national plan directed towards improvement of serviceable dwellings as well as re-housing in already congested areas, in addition to consideration for future schemes by means of which it may be possible to avoid the recurrence of the present conditions. As yet, however, it will be observed that the practical concern of our Dominion legislators has been entirely restricted to providing financial assistance for the construction of new housing not specifically allocated for those most in need of re-housing.

Provincial and Municipal

Although the province of Ontario is selected as an example, it is believed

that there is very little to distinguish the provisions made here from those of the other provinces.

In 1913 the Ontario Legislature passed *an Act to encourage the improvement of housing accommodation in cities and towns,* which amongst other provisions authorized the incorporation of companies to acquire land for the building of moderate sized houses that were to be sold or rented at moderate prices. Local authorities were permitted, upon petition of such companies and upon being satisfied that the need existed for such housing, to guarantee the company bonds to the extent of 85 per cent., provided that the company could raise the other 15 per cent. without borrowing. The local authority was authorized to have approval of the location and general plans of the houses constructed by such companies; to have the appointment of a member of the Board of Directors; and to be secured for the guarantee by a first mortgage on the houses and lands concerned. Limits were placed upon the annual dividends of companies so incorporated, and net profits in excess of that were to be expended towards redeeming the capital stock and extending the undertaking.

In 1920 the Provincial Legislature passed the Toronto Housing Act, authorizing the establishment of the Toronto Housing Commission. By this, the municipality was empowered to borrow money for the purchase of land, and the building thereon of houses of not more than seven rooms to accommodate working people of moderate means. Such houses were to be sold by monthly instalments, thus redeeming the principal with interest over a twenty-year period.

The legislation governing housing in Ontario through the Public Health Act, R.S.O. 1927, has provided in a general way vague powers to rectify the problems associated with housing in so far as they affect the health of the community. In the statutory by-law (Schedule B of the Act) which is enforceable in every municipality of the province not otherwise provided with supplementary by-laws, authority is granted relative to the abatement of nuisances, and conditions dangerous or injurious to the public health. In the absence of statutory specifications of minimum standards for health and comfort, the local authority is severely restricted in the application of what may be recognized as sound sanitary practice although unenforceable through the courts. No one will decry the virtues of popular education, but only those of practical experience thoroughly understand that when problems of health and proprietary rights conflict, education alone is not sufficient, the more so when financial conditions are by no means stable.

The Provincial Department of Health is empowered under the Act to promulgate Regulations dealing with various activities specified under sec. 6, which serve to amplify and qualify the generalities noted above, within the limits of which authorities can develop municipal schemes for the improvement of local conditions. In the absence of specific Regulations it is further possible for municipalities to submit by-laws for the approval of the Provincial Legislature to supplement the Act locally.

Such a by-law "To establish a standard of housing in the City of Toronto" was submitted as a private member's Bill at the last session of the Ontario Legislative Assembly on behalf of that corporation, setting out certain regulations that would enable the local authorities to remove the evidential anomalies of "hearsay" and "opinion" from such conditions as "unfitness for habitation" and "overcrowding," etc. Having thus established a set of housing standards, provision was made for the rectification of defects of premises by the owner, financially assisted if necessary by the local authorities, failing which the municipality is empowered to remedy the condition, demolish the offending structure or demolish the defective

building, all costs or expenses of which being a charge on the owner.

In this by-law, certain requirements are set out that will provide for the elimination of cellar dwellings, and regulate weather-proof and damp-free structures which must be satisfactorily finished both externally and internally. Provision is also made to enforce the maintenance of these dwellings, including the surrounding structures (fences, outhouses, garages, etc.) in a state of good repair and free of nuisances.

A "dwelling unit" is defined as "any room or set of rooms used for human habitation"; and a "room" is defined as one "commonly used for living purposes including bed-room and kitchen," but specifically excluding "any space in a dwelling used as a lobby, hallway, closet, bathroom, or any room having a floor space of less than 50 square feet."

Natural lighting and ventilation by glazed windows must be provided for every room as defined, opening directly to the outside air and furnishing a lighting surface of not less than 10 per cent. of the floor area, capable of opening to an extent of not less than 5 per cent. of the floor area.

Only a "room" as defined may be used for sleeping purposes, provision being made for the proper segregation of the sexes over 10 years of age with a maximum number of occupants in such being 3 persons, each of whom must be provided with 50 square feet of floor area. Where a dwelling unit consists of more than one room the total occupancy of such shall not exceed more than 1½ persons per room, and where more than 2 persons occupy a dwelling unit separate provision must be made for the preparation and cooking of food apart from the sleeping room. For the purposes of this by-law, a person is deemed to be one over 10 years of age; a child under 1 year is not counted, and up to 10 years is considered one-half a person. By this means a working definition of what is meant by "overcrowding" is provided.

The so-called amenities are dealt with by providing that there shall be:

(1) A water service with sink and drain within every building and any dwelling unit containing two or more rooms;

(2) One water closet with access within any building for every 10 persons or less occupying such a building;

(3) A suitable and convenient receptacle of not less than 4 cubic feet capacity for the storage of food in any dwelling unit for housekeeping purposes;

(4) A convenient and proper place or receptacle for the storage of fuel in or about any building and in or about any dwelling unit that is independently heated;

(5) For each dwelling unit a separate access either to a hallway, landing, stair-case, or the street.

Comment

From the foregoing it will be noted that so far no financial assistance or directive guidance has been forthcoming to provide for the construction of sub-economic housing, the need for which has become strikingly apparent over the last few years when the dependent proportion of the population has increased in this country. The Report of the Lieutenant-Governor's Committee on Housing in Toronto in 1934, and the Report on Housing and Slum-Clearance for Montreal in 1935, doubtless not isolated instances, have shown that the problem of slums is in urgent need of solution in Canada. While it is commendable that individual municipalities should attempt so far as is possible to work out their own particular problems in this connection, it is probable that the origins and results of such conditions are so common to the whole country that the cure or at all events the treatment should be developed as a national scheme outside the exclusive responsibility of the various provinces.

The reconditioning of worn-out houses in congested areas of intrinsically high commercial or industrial land value, and the legal authority to restrict the number of persons living on a premises, provide a doubtful solution and tend to postpone the ultimate settlement to the future. It is probable that what is most needed is an appreciation of the collected experiences of other countries that are meeting these problems by re-housing their congested populations, with a view to determining a plan of action that will as far as possible prevent recurrences. The situation in this country is not so varied from that of others to necessitate nine different experiments for its solution. We have available the experiences of others, we have some notion of our own needs and little reason to prevent this problem being considered as of nation-wide importance. If money must be spent on sub-economic housing, as appears inevitable, surely the plans, standards, and authority can be centrally developed to foster not only efficiency but also expedition and economy on a national scale without raising a constitutional crisis amongst so small a population as ours.

HEALTH INSURANCE IN BRITISH COLUMBIA

IN the March issue we had occasion to note the proposals relative to health insurance in British Columbia; now we have to record a "*fait accompli.*" The Hon. Dr. Geo. M. Weir, as Provincial Secretary, had the responsibility of guiding the Bill through its several stages in the Legislature, during which from press reports it appears to have been the subject of considerable protest, and some amendment from the 1935 Draft Bill. The Act as finally accepted is admittedly in the nature of an experiment, and subject to amendment as experience of its application may require.

Lest there should be some misapprehension as to what may appear to be the speed with which this Act (which has now become effective by Proclamation) has been placed upon the Statutes, it is only fair to note that the principle of health insurance has been before the legislators of this province for sixteen years. Following a resolution to the Assembly by Dr. J. W. McIntosh in 1920, the Government appointed a Commission to study the various insurance schemes in effect in other countries that might be applicable to the local situation, and to determine the desire for such social legislation by the people of the province. The report of this Commission was presented in March, 1921, and recommended that compulsory health insurance should be enacted in the province, applicable to wage earners under the age of sixty-five whose incomes were not in excess of $3,000 per annum. At the subsequent session, the Legislature, while approving of the report, shelved it by moving that the need for health insurance should be met by the Dominion authorities. In 1929 a second commission was appointed by the Government of that time to review and amplify the enquiries of 1920. In 1932, this Commission reported the overwhelming approval by the people of British Columbia for compulsory health insurance and a maternity benefit scheme, and recommended the early establishment of such, with specific suggestions as to the benefits to be included. The present Government included such a scheme in their pre-election campaign of 1933, and as such presumably have a mandate from their electors for the present Act. In its early form as a Draft Bill, this has been before the legislators and people of the province since March, 1935, and was further reviewed by a representative Hearings Committee appointed by the Provincial Secretary, the report of which was presented in November of the same year.

In essence, the Act compulsorily affects all wage earners, not otherwise equally protected, whose income is less than $1,800 a year, and voluntarily,

others of the same financial rating who from the nature of their occupations cannot be considered wage earners (merchants, farm workers, etc.). It is estimated to include approximately 125,000 wage earners in the province who with their dependents make eligible for the benefits under the Act about 300,000 persons.

To the organizing expenses of this Act, the Government is to contribute an initial sum of $50,000, and the wage-earners and employers concerned will contribute what is estimated will be an annual income of $3,500,000. Each employee will contribute 2 per cent. of his wages (not more than 70 cents and not less than 35 cents a week) which will be deducted by the employer who will contribute 1 per cent of his payroll (not more than 35 cents or less than 20 cents per employee per week) and forward these to the Commission.

A maternity cash benefit is provided for women under the Act, who are not confined in hospital. The other provisions are in the nature of medical benefits for the wage earner and his dependents, who become eligible four weeks after the commencement of contribution and continue to be eligible for four weeks after the cessation of such contributions. The benefits are:

1. Essential medical services, the choice of physician or surgeon being given the patients;
2. Public ward hospital treatment, including confinement and maternity care for a limit of ten continuous weeks;
3. Essential laboratory and diagnostic aids;
4. Drugs and dressings may be required to be charged for, at half cost.

The Commission will arrange for the payment of charges for medical services rendered with the profession as a body, it being estimated that such will involve the expenditure of $4.50-$5.50 per insured person per annum, which at those rates means an annual outlay for this purpose of $1,350,000-$1,650,000. The method of payment of this, which remains for settlement with the profession, involves any one of the three following alternatives:

(a) A fixed annual salary;
(b) A capitation fee based upon the panel system in Great Britain;
(c) A fee system—the funds assigned for this purpose being pooled and shared out to the physicians concerned upon the basis of the individual services rendered.

The administration appears to involve an organization similar to that recommended by the Hearings Committee—a Health Insurance Commission consisting of a full-time salaried Chairman and four other part-time members, assisted by a Technical Advisory Council of six members, including the Provincial Health Officer, a representative of the medical profession, the Workmen's Compensation Board, and three others, one of whom must be a woman. This Council is to be reimbursed for out-of-pocket expenses from the Fund.

Objections to the Act

No volume of objection appears to have been forthcoming from those who are to be included in the benefits of the Health Insurance Act. On the other hand, considerable opposition has been expressed by various other groups. A large delegation from business and industrial groups in British Columbia, representing the employers, requested postponement of action until the autumn session since business was considered unable to bear the 1 per cent. levy on the payrolls, and suggesting further investigation by a joint Committee in that interval. Their contention was that such legislation should be co-ordinated with such action as may be proposed in the other provinces, and that the burden of financial support for this measure should be more widely spread than under the present arrangements. The Canadian Life Insurance Officers' Association, in criticizing the unpredictable actu-

arial structure of the scheme, note that their opposition is unprejudiced since the companies represented by the Association are not concerned with such a type of business, and that they are favourable to a "well-conceived health insurance plan." Finally, the chief objections of the medical profession would appear to rest upon the fact that as an organized body they have not been given the opportunity to discuss the government's proposals relative to the services to be rendered, that the details of remuneration for those services remain to be fixed by the Health Insurance Commission, and that no provision has been made by this Act to remove the problem associated with the medical care of indigents.

ASSOCIATION NEWS

CONFERENCE IN VITAL STATISTICS

THE holding of a conference by the Section of Vital Statistics and Epidemiology in Toronto on May 4th and 5th reflects the important position which the Section occupies. The conference was called to permit of the presentation of the report of the Committee on the Certification of Causes of Death, particularly as relating to the revision of the International List of Causes of Death. It was necessary to call this conference as the date of the annual meeting of the Section as part of the Association's annual meeting in Vancouver in June was too late to permit of the recommendations being forwarded to the Dominion government, since the preliminary conference for the revision of the List will be held in Athens in the early fall. It was desired to urge the government that the Dominion Bureau of Statistics be represented at this meeting in Europe.

It was desired also to provide an opportunity for the presentation of the work of the Section to the executive officers of the Canadian life insurance companies and to enlist the co-operation of actuaries and medical officers of the leading companies in the conduct of studies which the Section has undertaken. The program of the conference provided for two general sessions and two round table conferences. A feature of the meeting was the luncheon session, attended by more that forty, which was addressed by Mr. Hugh H. Wolfenden, who chose as his topic "The Actuary's Interest in Vital Statistics". His address served as the keynote of the conference as it emphasized the common interest of medical officers of health, actuaries, and registrars, in vital statistics.

At the opening session on Monday afternoon under the chairmanship of Dr. Mary A. Ross, School of Hygiene, University of Toronto, and Vice-chairman of the Section, Dr. S. J. Streight, Medical Director of the Canada Life Assurance Company, stressed the importance of accuracy. Dr. N. E. McKinnon, School of Hygiene, University of Toronto, discussed the major causes of death by age-groups, indicating the causes which are a challenge to-day to public health endeavour. The paper of Mr. W. R. Tracey, Chief, Vital Statistics, Dominion Bureau of Statistics, on the history and procedure followed in the revision of the International List was of great interest. Two reports of the Section were presented. Mr. T. E. Ashton, Statistician, Department of Public Health, Toronto, presented the report of the committee on the allocation of causes of death according to residence. Dr. R. D. Defries, School of Hygiene, University of Toronto, on behalf of the Committee on the Certification of Causes of Death, outlined the purposes of the conference and reviewed the progress which had been made by the committee in its endeavour to improve certification of deaths.

On Tuesday afternoon the second formal session was held under the

chairmanship of Dr. D. V. Currey, Medical Officer of Health, St. Catharines, Ontario, and Vice-chairman of the Section. A feature of this program was the paper by Dr. N. L. Burnette, Metropolitan Life Insurance Company, Ottawa, presenting the need for a new approach to the problem of reducing deaths from motor car accidents. Following the discussion of this paper a resolution was passed requesting the Executive Committee to consider the formation of a committee for the study of this subject. The increasing interest in the effort of the Section to improve annual reports of medical officers of health was presented by Dr. D. V. Currey in a formal report from that committee. Mortality from cardiovascular-renal diseases was discussed by Dr. Mary A. Ross and a statistical study of diabetes was presented by Dr. R. D. Defries. At this session also the report on the revision of the International List of Causes of Death, as amended by the round-table conference held on Monday evening, was presented by Dr. A. H. Sellers.

The two round-table conferences, one dealing with the International List and the other with the use of the new Canadian death certificate, were most valuable. Represented in these discussions were the Department of Pensions and National Health, Ottawa, the Dominion Bureau of Statistics, the Provincial Bureau of Health of Quebec, the Department of Health of Ontario, Montreal, Toronto, Hamilton, St. Catharines, and the School of Hygiene, University of Toronto. The reports presented were amended and recommendations were made for presentation to the Department of Pensions and National Health and to the Dominion Bureau of Statistics in formal resolutions. Appreciation of the leadership in vital statistics and of the important contributions being made by the Dominion Bureau of Statistics was expressed. Plans were made for the appointment of two subcommittees, one dealing with the so-called "confidential" death certificate under the chairmanship of Dr. Paul Parrot and the other on still-birth registration, and certification under the chairmanship of Dr. A. H. Sellers.

The conference was attended by more than forty members, including representatives from ten of the Canadian life insurance companies. It was a source of great pleasure to have Mr. E. S. Macphail, late Chief of the Division of Demography, Dominion Bureau of Statistics, in attendance. It was regretted that Dr. Haven Emerson, Chairman of the American Public Health Association's Committee on Accuracy of Certified Causes of Death, was unable to be present. The desire of the conference was to maintain the closest possible relationship with Dr. Emerson's committee and appreciation was expressed of the naming of a representative of the Canadian Public Health Association last fall on this committee.

PUBLIC HEALTH WEEK IN VANCOUVER, JUNE 22nd-27th

COMPLETE information concerning the twenty-fifth annual meeting of the Canadian Public Health Association in conjunction with the American Public Health Association (Western Branch), the State and Provincial Health Authorities of North America, the Canadian Tuberculosis Association, and the newly formed British Columbia branch of the Canadian Public Health Association, was published in the May issue. The program provides a week of meetings of exceptional interest. It is seldom indeed that such an important group of associations have the opportunity of meeting together. In addition to the formal program, the Local Committee on Arrangements are ensuring to everyone a most enjoyable and profitable visit to Vancouver, including trips to beauty spots and the opportunity for golf on the far-famed courses adjoining the city. The visit to Victoria on Saturday, the 27th, will complete a memorable week.

The sessions of Monday and Tuesday are being provided by the Canadian Tuberculosis Association and the State and Provincial Health Author-

ities of North America. The Canadian Tuberculosis Association will have two clinical sessions, one of which will be conducted at the Vancouver General Hospital. The meetings of the State and Provincial Health Authorities will bring the outstanding leaders in public health of the United States and Canada.

The Western Branch of the American Public Health Association and the Canadian Public Health Association will commence their formal sessions with a breakfast meeting on Wednesday. In the afternoon the associations will enjoy a motor trip and a visit to Seymour Creek Intake. The public meeting on Wednesday evening will be of particular interest.

On Thursday, in addition to the general session in the afternoon, two important Sections of the Canadian Public Health Association will provide programs in vital statistics and epidemiology and in public health nursing.

The sessions on Friday provide meetings of the Western Branch of the American Public Health Association, and meetings of the Laboratory Section and the Section of Vital Statistics and Epidemiology of the Canadian Public Health Association, with a general session of both associations in the afternoon. On Friday morning will be held the first meeting of the British Columbia Public Health Association under the presidency of Dr. G. F. Amyot, Medical Officer of Health of North Vancouver. The members will leave for Victoria by boat on Saturday morning. The program in Victoria provides for a short session at the Parliament Buildings and visits to Butchard's Gardens and other points of interest.

CHARLES ARTHUR BARAGAR, B.A., M.D.

DR. CHARLES ARTHUR BARAGAR, Commissioner of Mental Institutions and Director of Mental Health in Alberta, died on March 8th from pneumonia. He was fifty-two years of age and had been in the public health service of the Province of Alberta for six years.

A native of Sterling, Ontario, Dr. Baragar came West in 1892 when his parents settled in Brandon, Manitoba. He graduated in Arts and Medicine from the University of Manitoba, receiving his degree in Medicine in 1914. Following graduation he joined the staff of the Ninette Sanatorium. In the following year he enlisted for war service and went overseas with the medical corps, attaining the rank of major.

While in England Dr. Baragar became interested in psychiatry and did post-graduate work in that field before returning to Canada. Following further study in New York, he received the appointment of Superintendent of the Brandon Mental Hospital in 1920, in which position he soon gave evidence of outstanding administrative ability. In 1930 he accepted the appointment as Director of the Mental Health Service of Alberta. In 1931 he was appointed lecturer in psychiatry in the University of Alberta.

While in England in 1918, Dr. Baragar married Miss Eugenie Ledoux, who predeceased him in October, 1930. He is survived by three children, Marie, Bruce, and Robert.

Not only in Manitoba and Alberta, but far beyond the borders of these provinces, Dr. Baragar was recognized as one of the outstanding authorities in the field of mental hygiene. He brought to the work to which he devoted his life not only a brilliant mind but a deep understanding of human needs and a fine appreciation of the real values in life. He was a man of the highest ideals, who gave himself unreservedly in the service of humanity and was held in the highest affection and regard by all those with whom he was associated in public health work.

BOOKS AND REPORTS

Epidemics and Crowd Diseases. *By Major Greenwood, D.Sc., F.R.C.P., F.R.S. Published by Williams and Norgate, Limited, 36 Great Russell Street, London, W.C.1, England, 1935. 409 pages. Price 21s.*

Dr. Greenwood is well known as a most distinguished epidemiologist and statistician and he has made many important contributions to our knowledge and methods in epidemiology. Throughout the terse chapters of this work, the emphasis is laid upon the application of the statistical method to epidemiological problems and not upon the equally essential knowledge of clinical disease, bacteriology, immunology and parasite-host relationships.

The approach to epidemic diseases by the early medical masters, Hippocrates, Galen, Caius and Fracastorius, is first reviewed. As soon as statistical systems of recording were introduced by the English school beginning with the Bills of Mortality in the 16th century and the subsequent works of William Farr and John Graunt, the first approximation to the truth of the spread of epidemics was made. In the analysis of disease in the mass the application of the "new statistical methodology" was carried on by Quetelet, Galton, and Karl Pearson. It was this school that had a great influence on subsequent medical science in general for it showed the need of biometrical truth. An excellent chapter is that in which the contributions of experimental epidemiology are reviewed. In this the author gives some of his own observations which have been substantially enlightening. A chapter on "The Artificial Immunization of Man" is devoted to a critique of assessing the value of this measure and in this he gives examples of English experience in which fallacious statistical conclusions have been drawn. There are three short chapters on procatartic factors of illness including the nutritional, occupational and psychological factors.

The second part of the book applies the statistical principles to particular diseases. Chapters are devoted to the typhoid group, cholera, measles, diphtheria, scarlet fever and smallpox, plague, epidemic neurological diseases, influenza, venereal diseases, tuberculosis and cancer. The history of the development of the knowledge of epidemiology of these diseases is combined in these chapters with a diverse presentation of the history and stories of notable epidemics. In each he attempts to show how simple, logical reasoning and appreciation of scientific proof have resulted in the evolution of today's epidemiology. The exhaustive statistical studies on measles by Brownlee, Stocks and Soper are criticized. It is emphasized that what public health action should seek to secure is postponement of the age of attack combined with amelioration of those particular conditions of overcrowding which are especially helpful to spread by droplet infection. Scarlet fever affords us the best example in epidemiology of change of type and in showing this the history of the disease is traced from the earliest records. He concludes that there is no statistical evidence that isolation has had any appreciable effect upon either the prevalence or the mortality of scarlet fever during the last twenty-five years. Concerning diphtheria, one is disappointed that the author makes no reference to the very important work of Frost and Doull in America who showed the relative importance of cases and carriers as sources of infection.

The views on diphtheria immunization are remarkably insular and reflect observations on an environment where little immunization has been done. We in America, where diphtheria immunization has been practised on a large scale with careful subsequent observations, cannot subscribe to the view suggested by Dudley that the percentage of actively immunized per-

sons who carry virulent organisms in their throats is much above the normal average, and that therefore "from the crowd point of view the immunization is a pure waste of effort" as Dr. Greenwood states, admitting that this may be an exaggeration but nevertheless asserting that the argument is based upon definite experimental evidence.

The history of smallpox in Australia is reviewed to support his hypothesis that in an imperfectly protected community "classical" smallpox does not necessarily spread widely, and within such a community a form of smallpox which differs notably from the classical type may become widespread. That the writer has forgotten that epidemiological practices should be directed to protection of the individual as well as of the community is evident in the following statement in respect to smallpox vaccination: "Provided that we keep our powder dry, that we have always available a completely sufficient supply of potent lymph, I think we may view the passing of even nominally compulsory vaccination with equanimity." Two interesting chapters on "Jenner" and the "Post-Jennerian Controversy" are illuminating discussions on whether Jenner was a "transcendent scientific genius or a super-crook", along with observations of the effect of the introduction of vaccination against smallpox. At the end of each chapter recommendations for further reading are given, most of them publications of English and German statistical epidemiology.

Those who know Dr. Greenwood are in a position to evaluate many of the statements made in this book, but it is unfortunate that numerous statements, particularly when quoted apart from their context, are open to misinterpretation by those unfamiliar with his presentations. For this reason it is not a text book for beginners, but advanced students of epidemiology will welcome Dr. Greenwood's contribution, if only for its stimulating qualities.

K. F. Brandon

Hemeralopia as an Early Criterion of A-Avitaminosis and Clinical Symptoms and Treatment of this Disease. *By Helga Frandsen. Nyt Nordisk Forlag: Arnold Busck, Copenhagen, 1935. 160 pages.*

This is a monograph dealing with reduced vision in subdued light and the significance of such reduced vision as related to the intake of vitamin A. While a different method of measurement was employed, the results agree to some extent with those reported by Jeans and Zentmire in 1934, and to which no reference is made.

It has been known for some years that a deficiency of vitamin A tends to produce night-blindness and the experimental work of Fredericia and Holm shows that the lowered regeneration of visual purple in the eyes of A-deficient rats provided a physiological explanation. Frandsen, Jeans and Zentmire, and several other investigators have felt that subclinical A-deficiency could be shown to exist by determining the vision of subjects in subdued light after exposure to bright light. The results in this monograph and those published elsewhere, indicate that such may be the case and that the observed hemeralopia may be treated by the administration of vitamin A.

There is no doubt that simple, reliable tests which could be used to determine mild vitamin deficiencies would be of great assistance. Frandsen feels that the work discussed in this volume provides such a test for A-deficiency. It is to be hoped that the reviewer may be pardoned for feeling somewhat sceptical. Frandsen concludes that hemeralopia results from A-deficiency, yet reports that calcium phosphate, given with vitamin A, improves the response, and indeed that the condition may be successfully treated with vitamin D. In making measurements of vision there may be extensive subjective error.

The monograph is interesting and the English translation is well done. It can be recommended to all those interested in nutrition, as an outline of work which lies in the right direction.

E. W. McHenry

Milk: Production and Control. *By Wm. Clunie Harvey, M.D., D.P.H., M.R.San. I., Medical Officer of Health, Borough of Southgate, and Harry Hill, M.R. San. I., Sanitary Inspector, Borough of Southgate. Published by H. K. Lewis and Co., Ltd., London, W.C. 1, England, 1936. 555 pages, 130 illustrations. Price in Great Britain, 21/ net.*

This extremely practical text covers all phases of milk production from the cow to the consumer, and the viewpoints upon contentious subjects are presented with unqualified fairness. Good judgment is shown in the provision of plans and trade cuts showing the various types of equipment and dairy apparatus. These are accompanied by complete descriptions and criticism, and in this aspect the book leaves little to be desired.

In the sections of the book dealing with milk analysis, the essential bacteriological and chemical procedures are given in detail. The inclusion of extracts from the legislation governing the milk industry in Great Britain is another valuable feature. The authors are to be congratulated upon having reduced the technicalities of the subject without loss of effectiveness to such a degree that the book should be comprehensible to everyone who is concerned with the production, distribution or control of milk in Canada. It should prove to be a practical reference manual for both medical officers of health and sanitary inspectors in the education of the various parties concerned with this commodity from the producer to the consumer, all of whom should know the "whys and wherefores" of the problems associated with a safe and economical milk supply.

F. A. T. Sneath

Personal and Community Health. *By Clair Elsmere Turner, M.A., Dr.P.H., Professor of Biology and Public Health in the Massachusetts Institute of Technology. Fourth edition. Published by the C. V. Mosby Company, 3523 Pine Blvd., St. Louis, Mo., 1935. 680 pages. Price $3.00.*

"Personal and Community Health" now in its fourth edition, is an elementary text book of hygiene designed for university students. It appears admirably suited for the purpose.

The text is divided into two parts. The first deals broadly with all aspects of personal hygiene. An outline of the anatomy, physiology, and hygiene of the various organ systems of the body is given. This is information which every intelligent citizen should possess. The many practical points on personal hygiene may be said to represent the scientific wisdom of experience. The chapter on nutrition is an excellent one and adds much to the value and interest of the section. The second part of the book is devoted to various aspects of community health. Historical developments in disease prevention, essential facts of immunity, food control, and maternal, school, and industrial hygiene are among many of the phases of public health reviewed. These chapters are designed to give the reader an appreciation of the problems and methods in maintaining community and national health.

It is a difficult task to write a book such as this satisfactorily. The reviewer feels, however, that the author has been successful in presenting the essentials of the material in relatively simple terms and certainly in a most interesting manner. The non-technical character of the volume fits it for a broad sphere of usefulness by all classes of students. One hundred and thirty-one illustrations and four coloured plates add much to its value. Wide use of this book would be endorsed heartily by the reviewer. The inclusion of a glossary is an admirable and indispensable feature.

F. O. Wishart

Annual Report of the Surgeon-General of the Public Health Service of the United States for the Fiscal Year 1935. *Published by the United States Printing Office, Washington, 1935. 158 pages. For sale by the Superintendent of Documents, Washington, D.C. Price, 75c. (cloth).*

The sixty-fourth annual report of the surgeon-general of the United States Public Health Service for the fiscal year 1935 gives a vivid word-picture of a vast drama of human experience. The form of the report is unchanged from that of preceding years but its contents are none the less of absorbing interest for the reader. One cannot peruse these pages, even hurriedly, without being impressed with the nature and extent of the tasks undertaken and the progress made. Dr. Cumming and his associates must certainly feel gratified.

As a preface to the main body of this report, the surgeon-general reviews the major facts and findings of the year. Health conditions in the United States again showed definite improvement. The birth rate increased by 3 per cent; the death rates from tuberculosis, diphtheria, and typhoid fever were the lowest ever recorded in the history of the public health service. The progress made in the many problems whose investigation has been undertaken is recounted. These researches cover all branches of scientific effort.

The reports of the various divisions of the Public Health Service form the major part of the report proper, and in these the reader is given clearer insight into the character of the work in each. The personnel summary as of July 1, 1935, shows 10,985 employees on the roll, of whom 4,643 were collaborating and assisting epidemiologists. A financial statement indicates that the obligations incurred during the year amounted to ten and a half millions of dollars. The full value of the service rendered to the people of the United States, and indirectly to the world in general, by the work of the Public Health Service, cannot, however, be satisfactorily assayed merely in terms of the dollars and cents spent on it. Generations yet unborn will live by the fruits of this great work.

A. H. Sellers

Third Annual Report of Mental Institutions, 1934. *By R. H. Coats, LL.D., Dominion Statistician. Published by the Institutional Statistics Branch, Dominion Bureau of Statistics, Ottawa, 1936, by authority of the Hon. W. D. Euler, M.P., Minister of Trade and Commerce. 60 pages, 49 tables.*

This interesting and comprehensive report is presented in two parts. The first of these includes general statistics on the movement of patient population and certain facts of a financial and administrative nature. The second section presents detailed tables which summarize admissions, discharges, and deaths, and give a detailed classification of the various psychoses, etc., in 31 public mental hospitals in Canada.

At the beginning of 1934 there were 36,571 patients in 56 mental institutions, a rate of 335.6 per 100,000 general population. This number is 1,700 in excess of the total normal bed capacity and represents an increase of 13.4 per cent in resident patients over 1931 figures. The general mortality rate per 1,000 patients in 1934 was 62.1 or over 6 times that in the whole population.

These and other data included in this report give the reader a broad picture of mental hospital statistics in Canada and some conception of the magnitude and character of this health problem. The tables on expenditures for the care of mental patients in these institutions ($323 per caput on the average in Canada, 1934) emphasize the need for renewed efforts in medical research in this field.

A. H. Sellers

CURRENT HEALTH LITERATURE

These abstracts are intended to direct attention to articles that have appeared in other journals during the past month. Any of the journals referred to may be borrowed for three days or longer if desired. Address requests to the secretary of the Editorial Board.

Cultivation of Poliomyelitis Virus in Vitro

The authors claim to have grown poliomyelitis virus (M.V. strain) on human 3 to 4 months' old embryonic nervous tissue. When the third culture of the virus in human embryonic brain was transferred to chick embryo brain it was possible to carry the virus in the latter medium for 3 successive subcultures, but several attempts at further adaptation have so far been unsuccessful. The culture produced typical poliomyelitis when inoculated into rhesus monkeys.

A. B. Sabin and Peter K. Olitsky, Proc. Soc. Exper. Biol. & Med., *34*: 357, 1936.

An Outbreak of Epidemic Jaundice

This outbreak of jaundice involved 32 students out of a total of 132 males attending a religious novitiate in St. Louis County. The epidemiological study showed that the epidemic began in the senior group aged 19 to 20 years and then extended to the scholastics, a group aged 21 to 22 years. The only opportunity for contact between these groups and the third group or juniors who were last attacked, was at chapel on Sunday when members of the same family met. The attack rate was 24 per cent and was about the same in the three groups of students. The epidemic lasted about 16 weeks.

The clinical disease was mild, with the characteristic progressive occurrence of fever, nausea, vomiting, abdominal pain, constipation, clay-coloured stools, smoky urine, and icterus. The jaundice lasted from 3 days to 22 days, usually 7 to 10 days. It was felt that the clinical picture suggested Weil's disease. With this in mind, attempts were made to demonstrate Leptospira icterohemorrhagiae by guinea-pig inoculations of blood, saliva, faeces and urine of cases, but without success. Leptospira were demonstrated in the samples of water removed from holy water fonts but these were not pathogenic for guinea pigs.

This reported outbreak reveals the appreciable lack of scientific knowledge of the etiology of this disease known as "epidemic catarrhal jaundice", which is of frequent occurrence in Canada.

J. C. Willet, E. Sigoloff, and C. L. Pfau, J.A.M.A., *106*: 1644, 1936.

Note—A number of epidemics of catarrhal jaundice have been reported in England in recent years and some detailed studies made on these. Clinical observations reveal a uniformity of type of disease. Most of the reported outbreaks have been in rural areas, and adults and children are both affected, although the English observations have been that the disease occurs chiefly in children. The causative agent has not been determined and a virus has been suggested. Whatever the agent, it is transmitted from person to person, depending, it seems, on fairly intimate contact.

Other references to outbreaks are (1) Findlay, Dunlop and Brown: Observations on Epidemic Catarrhal Jaundice, Trans. Roy. Soc. Trop. Med. & Hyg., *25*: 2, 1931; (2) H. H. Bashford, Lancet, *227*:1008, 1934; (3) J. A. Glover and Joyce Wilson, Lancet, *220*: 722, 1931; and (4) Roy Fraser, Canad. Pub. Health J., *22*: 396, 1931.

Heat Cramps in Hot Industries

In metallurgical works in Russia, men suffering from cramp or prostration were taken to hospital and carefully investigated clinically. One group had cramps only; a second group had no cramps. The group with cramps included men of 10-15 years of service. This group consumed large amounts of water. On admission they showed high blood viscosity, with low urine output and low urinary chlorides. The second group suffered sudden vertigo, weakness and headache. They were pale, profusely sweating, and had pyrexia and hypernoea, but recovered quickly. These men were usually new men and

inexperienced. It is explained that heat cramps are due to a disturbance of the water-salt metabolism, but prostration differs in being due to a disturbance of the thermo-regulating system. Both these conditions can be avoided by training new workers and supplying 0.5 per cent sodium chloride solution to drink at work.

P. M. Starkoo and J. V. Jikesh, J. Indust. Hyg., *17*: 247, 1935.

Meningitis due to a Filterable Virus

The clinical picture presented by two patients suffering from aseptic lymphocytic meningitis is described, along with accounts of the method of isolation of the virus from each patient's spinal fluid. The etiological agents in both cases were identical and the disease was transmitted to laboratory animals. The authors compare this virus causing meningitis with viruses which invade the central nervous system of man and lower animals. The relative importance of this virus as a cause of meningitis in humans is discussed and it is felt that infection with the virus would not explain all cases of aseptic meningitis.

T. F. M. Scott and T. M. Rivers, J. Exper. Med. *63*: 397 and 410, 1936.

Routine Tests for the Presence of Living Tubercle Bacilli in Cow's Milk

In testing milk samples the guinea-pig inoculation method is most commonly used to detect the presence of living tubercle bacilli. Some laboratories use only one animal per sample, others at least two. This investigation was carried out to compare the efficiency of the test using one animal with that using two or more.

The results are based on 4,775 tests. The procedure was as follows: The whole of the deposit from 75 cc. milk centrifuged at 3000 r.p.m. for 20 minutes was suspended in 5 cc. sterile saline and 2.5 cc. inoculated (1.25 cc. into each thigh subcutaneously) into each of two guinea pigs of at least 250 grams weight. The animals were kept for 6 weeks and careful post-mortem examination was done on each. In rare cases the nature of the lesions was not clear and in these, re-inoculations with material from the lesions was made. The data fell into the following classes: (1) both guinea pigs positive (2) one guinea-pig positive and one negative, (3) one guinea-pig positive and one died from intercurrent infection, (4) both guinea-pigs negative, (5) one guinea-pig negative and one died from intercurrent infection; and (6) both guinea-pigs died from intercurrent infection, i.e., no result. The results were divided into two groups: A—3,346 bulk milk samples, of which 2,176 were classified as showing dirt; B—1,429 single cow samples of which 303 showed dirt. Of group A, if one guinea-pig was used, 14.6 per cent of the positive samples were not detected, whereas with two guinea pigs this per cent was 2.1. In group B, one guinea-pig failed to detect 9.35 per cent of positive samples, but two missed only 0.88 per cent. In group A, 7.5 per cent of the samples contained living tubercle bacilli; in group B, 13.3 per cent.

The percentages of animals dying from intercurrent infection when milk did not reveal tubercle bacilli was 8 for single cow samples and 10 for bulk samples. The percentage of results falsely returned as negative was 6.9 for bulk milk samples and 1.9 for single cow samples, 3.5 for all "clean" samples and 5.9 for all "dirty" samples of milk.

These workers also found that deaths of guinea-pigs from "intercurrent infection" appeared to be greater for non-tuberculous than for tuberculous milks, with the exception of "clean" samples from single cows.

A. T. R. Mattick and P. White, Med. Officer, *54*: 265, 1935.